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XXXIV.

THE NECESSITY FOR THE OBLIGATORY TEACHING OF OTOLOGY IN THE MEDICAL SCHOOLS.*

By Prof. A. Politzer.

VIENNA.

If I broach this subject to-day before this distinguished assembly composed of the chief representatives of otologic science in every country, it is not with the pretense of demonstrating to you that official instruction in otology in the medical schools is necessary for practitioners. Such a demonstration appears to me to be really superfluous in a congress, the members of which belong to our particular science.

An exposition of this theme in an international congress of otology appears important to me because an affirmative vote of such a congress cannot be ignored by the authorities charged with the direction of teaching in the schools of medicine.

The demand for obligatory instruction of otology in the schools is not a new thing. In 1879 V. Troltsch addressed a memorial to the German chancellery in which he showed by convincing arguments that otology should occupy the same rank as other branches of medicine, and that it was absolutely nec-

*Read before the International Congress of Otology at Bordeaux, August, 1904.

essary for each practitioner to be capable to some extent of treating ear troubles; consequently that students should be subjected, at the end of their studies, to a special examination in otology.

This proposal has remained without result, and since 1879 no effort has been made to realize this idea.

Recalling the disastrous experiences met with in general practice, I am impelled to show the wrong done to society by the absence of otologic instruction from the program of official studies in the medical colleges, and the absolute necessity, from a social view point, of a knowledge of otology by every physician.

It is of course useless to dwell at length upon the important role filled by the auditory organ in life; it is useless to recall that partial or total loss of hearing may injure the career of a person and deprive him of all social joys.

If we ask ourselves if this infirmity is an unavoidable consequence of pathologic aural lesions, we are obliged, in a great number of cases, to answer in the negative.

In fact, practice has shown that, in a large number of cases, defects of hearing, caused by catarrhal processes in the middle ear, may be avoided by treatment instituted at the proper time—treatment at the command of every physician and not requiring the intervention of a specialist.

Even more grave causes consist in the neglect or improper care of the so frequent suppurations of the middle ear, either acute or chronic, which may terminate in ulceration, caries and necrosis of the temporal bone, and complications, the results of which may be fatal.

Since statistics prove that most cases of meningitis, cerebral abscess and sinus phlebitis are of otic origin, it remains for us to discover if the fatal complications are inevitable, or if they may be reduced to a minimum by therapeusis instituted at the outset.

One could doubtless answer this question affirmatively, thanks to antiseptic treatment of middle-ear suppuration; the grave complications of otitis being due to stagnation and septic decomposition of the middle-ear secretion, for to retard the disease is easy for any physician initiated in the most simple methods of examining and treating the ear.

One is shocked by the number of deaths in the country occasioned by otic affections in the course of violent influenza epidemics.

Here we see mastoid abscesses form, which, if they are not operated upon in time, end fatally by cerebral complications, while the patient would have been saved by opening the abscess, which could have been easily done by any physician.

In these circumstances is it admissible to consider otiatry as holding a rank inferior to other specialties, such as dermatology and ophthalmotology? No; on the contrary, we would assign it a privileged place, compared with certain obligatory branches which in most cases deal only with functional manifestations, while many ear diseases jeopardize the life of the patient.

Now, can we reproach the physician who has quitted college after brilliant study, if he is incapable of caring for common forms of ear affections? Certainly not, since otology does not appear on the official list of studies.

Here we touch the culminating point of our subject, and it is necessary for us first to consider the present state of otiatric instruction in the European and transatlantic universities, and ask ourselves if it suffices for its humanitarian object.

It is not necessary to go back more than fifty years to find that there was no thought of otology in the universities.

It was an almost ignored specialty in the middle of the nineteenth century when other branches of the medical art had already set a place apart for themselves. It was only after the anatomo-pathologic researches of Rokitansky and Cruveilhier that Toynbee made himself noted by his dissections of the auditory organs. These researches have had as a consequence a lively scientific activity in otology, thanks to a little phalanx of enthusiasts in this specialty, which in a relatively short time succeeded in divorcing otology from empiricism, organizing it into an autonomous science, and placing it in the same rank as other special branches of the medical art.

In a comparatively brief space of time modern otology has achieved such importance that several medical colleges in Austria, in Germany and in Italy have been obliged to admit otiatry to a number of disciplined clinics.

At the beginning they were always content to assign assistants in the Faculty to teach otology in the out clinics. For a commencement this method of teaching appeared sufficient.

It was only after more than ten years experiment that there were obtained from the authorities regular otologic clinics, by

showing the inadequate care of non-hospitalized patients. But it was more especially the rapid development of aural surgery, necessitating rigorous operation asepsis and proper surroundings, which hastened the establishment of otologic clinics.

From a historical point of view, I would remark that it was at the University of Vienna where an otologic clinic was installed, the first time in the whole world, in 1873. The value of this example is well recognized, since from it came the impulse for the foundation of hospital clinics in other European countries.

In spite of the advance made by otologic science since that epoch, both in Europe and on the other side of the ocean, and notwithstanding this specialty has attracted a number of enthusiastic adepts who have both scientifically and practically elevated otiatry to a place equal to other specialties, we see with regret that after thirty years they have obtained only a precarious footing in the universities.

The limited time of this Congress will not permit me to enter into details concerning the present status of otology in the different countries of Europe. I will content myself with pointing out the numerous divergencies in the university otologic departemnts.

While in some countries this science has attained a position almost coequal with that of other medical branches, there are others in which the government does not support any otologic clinic and official otiatric instruction is wholly wanting.

Even where well organized otologic clinics exist, the students have derived little profit from them. I attribute this fact to the ignorance of pupils as to the practical benefits to be derived.

Once settled, the young doctor perceives too late the lacunae in his otologic knowledge and how difficult it is to fill up, the country practitioners rarely having opportunity to absent themselves long enough to complete their study.

In recent years, in Austria, Germany and Spain, every student is required to take a course in otologic practice without being obliged to undergo an examination. Although this is a progressive step it is only a half measure. Only a very small number of students profit by it, most of them, knowing they will not be examined, enroll for the course but never attend.

For leaving otology off the examination schedule the pretext has been advanced that the students are surfeited with work

and that a new specialty should not be imposed upon them.

I believe, on the contrary, that without harm to the education of pupils it would be possible to further develop the practical side of the academic knowledge required, on condition that the purely theoretic branches be erased, in part at least, from the study card, considering that they uselessly burden the mind of the student and are never of either scientific or practical use in his career.

There should be no question of overdoing in imposing the study of otology upon students. The task of the professor would be to teach, on the one hand, fundamental principles to students who will devote themselves to general practice, and, on the other, to educate specialists.

The pupil who designs to do general work ought not to be loaded with minute details, which are indispensable to the specialist, but which he would never have occasion to put in practice.

But what we have a right to demand of the State, in the interest of public health, is to make it possible for every physician to diagnosticate the simple forms of aural affections which he meets in practice.

Just as he is expected to know how to treat a conjunctivitis rationally, he should be capable of caring for a middle-ear catarrh or suppuration.

I have consumed my time, and I believe I have demonstrated that the duty of the State consists not only in founding in each medical school a chair with a regular otologic clinic, but also in including otiatry in the required examinations, in order to put this specialty in the hands of every physician.

It would be of capital importance from a social aspect. The realization of the idea is of absolute necessity and should be attained sooner or later, when those who direct university medical instruction shall have acquired the conviction that otiatry should be considered equally important as other branches of medicine.

To emphasize this belief I have laid the matter before you, and I shall be happy if, in the presence of this illustrious body, I have succeeded in advancing the progress of modern medicine and the broad interest of humanity.

XXXV.

THE EMPLOYMENT OF MUCIN IN ATROPHIC CONDITIONS OF THE NOSE AND THROAT.*

By James E. Newcomb, M. D.

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Attention is called in this paper to some of the properties and uses of a substance which we are not accustomed to include in the list of therapeutic agents. Such a consideration of it is an idea of the last few years only and is the result of a propaganda carried on by a London physician connected with the Central Nose and Throat Hospital of that city, Mr. William Stuart-Low. His researches in this direction have been so complete, his clinical experience so extensive and the tone of his conclusions so temperate that we ought, it seem to me, to take up the matter and see whether we have overlooked in this familiar substance an agent of therapeutic value. A study of the question must necessarily re-traverse most of the road followed out so carefully by the authority named.

The physiologist defines a proximate principle as one occurring in the body under its own form, not one into which the body may be ultimately resolved in the laboratory. The three great classes are carbo-hydrates, fats and proteids. These latter contain carbon, hydrogen, nitrogen, oxygen and sometimes sulphur. They are known to occur only in or as derived from living bodies. A subdivision of these is called colloids. These are albuminous derivations. In this class belongs mucin which may occur in the body either in its form or potentially in its forerunner, mucinogen. Mucin occurs under two conditions; first, as a cement substance between all kinds of cells, tissue mucin; second, on all mucous membranes, in mucous

*Paper read before the Section of Laryngology of the N. Y. Academy of Medicine, December 28th, 1904.

glands and in many epithelial and goblet cells. It exists therefore in the connective and more particularly in the embryonal tissues. It is said to form the chief constituent of the bodies of some invertebrates and is found in large amount in the bile. It is soluble in water and weak alkalies, is precipitated by alcohol, weak acids and acetic acid. It is not precipitated by heat. On boiling with dilute mineral acids it yields a substance which reduces Fehling's solution. It is probably in its origin the result of the differentiation of the protoplasm of certain animal cells. It is very difficult to give a compact formula of this class of compounds. One analysis of mucus from the human sub-maxillary gland gave the following results:

Carbon	52.31
Hydrogen	7.22
Nitrogen	11.84
Oxygen	28.63
	100.00

Primary analysis of mucin yields a proteid and a carbohydrate which is often referred to as "animal gum." There are probably several members of the mucin class. The function of mucin is to protect the delicate membranes on which mucus is poured out, not only against desiccation and from the injurious contact of foreign bodies but also under certain conditions from the effects of acid secretions held in confinement as in the stomach and bladder. While the former function is obvious everywhere in the body, it is on the mucosa of the upper air and food tracts that it is from the possibility of direct inspection most evident. Low's researches show that mucin has a retarding effect on bacterial growth, that sterile solutions containing it remain sterile for a long time on exposure to the air and that bacteria cease to grow in culture media when mixed with mucin.

May I briefly digress to state that this latter fact throws incidentally some light upon the earlier statements made by some authors concerning the bactericidal power of nasal mucus. A new chapter was opened in this discussion when Wurtz and Leromyez declared some ten years ago that mucus possessed this power very definitely in the case of the bacillus of anthrax and definitely in case of nearly all other pathogenic micro-organisms. From their experiments they concluded first that air passing through the nose reached the lungs

in an almost sterile state and second, that the interior of the nose was not a veritable nest of microbes as had always been supposed but that the nasal channels were cavities relatively aseptic in which most of the inhaled germs perished. The stage of increased secretion in an acute coryza they regarded as an illustration of an aroused mucous membrane, striving to increase quantitatively its means of defense against bacterial invasion, viz, the secretion of an increased amount of bactericidal mucus. If this first attack on the enemy was successful, the disease stopped. If it did not and the invasion went on, the pituitary membrane called to its aid a second line of defense, viz, an increase of the diapedesis normally occurring on its surface, an increased leucocytosis. Mucus was succeeded by muco-pus and the phagocytic action of certain of the cells was brought into play. But as Thomson reminded us in 1900, no one was able to confirm the results of the authors named except one of their pupils Piaget, against the accuracy of whose work numerous well-sustained charges were brought. Thomson and Hewlett deny that nasal mucus is bactericidal, granting however that it either simply inhibits growth or at least does not favor it. It does not seem that whatever restrictive effect on bacterial growth nasal mucus may have is due to mucin alone. Piaget was never able to observe in test tubes the absorption of carmine grains or of bacteria by the leucocytes of nasal mucus but if he made the mixture while the mucus was still in the nose he was able to satisfy himself that the cells exerted their phagocytic action on the pneumo-coccus, the pneumo-bacillus and the Klebs-Loeffler bacillus. Thomson aptly remarks that "nature seldom limits herself to one line of defense and it would be hard to say whether the first 'fighting line' is given to the movement of the ciliated epithelium, the inhibitory action of the mucus or the phagocytosis of the leucocytes". Finally it may be recalled that the flora of the nose vary greatly with locality; in the vestibule, bacteria fairly swarm but in the deeper recesses of the nasal chambers they are very scanty. Viollet found that in eighty per cent of his observations, the mucus from the interior of the nose was sterile.

What becomes of the nasal mucus under normal conditions? Low calls attention to the presence of but few muciparous glands in the olfactory portion of the nose but their great abundance in the respiratory. He also states that as defining the direction of the flow and the ultimate destiny of all

mucous discharges in the normal nose, is the slanting position of the turbinated bones and the meatus. The tendency of the discharge is to pass downward and backward into the pharynx. The more watery discharges from the upper regions and accessory cavities tend to mildly flush the more viscid secretions down on into the pharynx.

When artificially applied to the nose and pharnyx, mucin solutions have a soothing and emollient action, moisten the surface and soften incrustations, readily facilitating their removal and preventing their re-formation. They obviate fetor which is one of the best points in their favor. By their hygroscopic action which is about one fourth as great as that of glycerine, they tend to restore the function of smell and favor the filtering and warming functions. If the amount normally present is lessened by disease there is desiccation and abeyance of function. A dry mucosa cannot functionate. Combined with an alkali the solutions neutralize the acid often found in atrophic rhinitis. They undoubtedly have an influence in retarding the epithelial metaplasia which is regarded by some as the underlying factor in this affection.

The source of mucin for therapeutic use is from the membranes of the calf and pig. As supplied in commerce, it comes in the form of tablets. As far as is known to the writer only one of the English firms has supplied the product. Acting on the suggestion of Mr. Low, it has put up the remedy in two forms. One is the "tabloid" containing five grains each of mucin and bi-carbonate of soda. This looks and tastes not unlike the familiar pepsin tablet except that it is a little darker in color. It is used primarily for internal administration and as a trochee for the pharynx. The soda is added because mucin wherever found in the body is always combined with an alkali.

The second preparation is the "soloid", composed of four and a half grains each of the mucin and the bi-carbonate and one grain of menthol. One of these may be dissolved in half an ounce each of sterile water and sterile lime water, the solution to be used in any of the familiar nasal irrigation apparatus. The solution thus made is somewhat mucilaginous containing coarse particles in suspension. If used in a spray tube, some warm water should be thrown through the latter once daily so as to prevent clogging. In my own experience I have not been able to verify all the statements made with reference to the keeping of mucin solutions uncontaminated

for in the damp heat of New York summers the frequent corking and uncorking of the bottle during the clinical hour has led in the course of a few days to contamination. The menthol in the "soloid" undoubtedly acts as an antiseptic. This I found by experimenting with various substances before the preparation with menthol came into my hands. The best results as to preserving the solutions were obtained from adding thymol in the proportion of about half a grain to the ounce. This seened to meet every requirement and the solutions kept well during the hottest weather. It is better however to make fresh solutions every two or three days. Mr. Low advises the tying up of a soloid in a piece of thin muslin, soaking the whole in sterile warm water for an hour or more and then squeezing well so as to express all mucin into the solvent.

I have given this remedy a thorough trial during the last two years and feel convinced that it is a valuable addition to our resources. It is not a panacea. It is not a specific but its sponsor claims that it does more than anything else yet tried to relieve the discomfort of mild atrophic states in the mucosa of the upper air tract and to mitigate the distress and suffering of the more severe ones. As to its employment in softening crusts a generous application of the solution on a cotton swab is preferable to the spray. Right here I would like to re-iterate the caution expressed in Hajek's excellent book on sinus disease against the wholesale flushing of the nares when cases which seem to be ordinary atrophic rhinitis first come under observation, and when we are endeavoring to make an accurate diagnosis. If the crusts are carefully removed by cotton and if we find fluid pus under them, the presumption is that the crusts represent dried pus and by careful attention we may be able to detect the direction from which this comes and so be able to locate a focal lesion as the fundamental cause of the malady.

Mr. Low objects to the use of liquid grease in any form for softening and moistening purposes in the nose and utters a note of warning against the "oiling of the nose" which has become in recent years such a common procedure. Thereby we clog and paint over, he claims, the remaining half-atrophied mucus glands. If actual pus is present, it may be removed by a sodium sulphate spray which is one of the best solvents of albuminous material at our disposal.

No attempt is here made to discuss the pathology of what we call atrophic rhinitis. When a recent text-book written

on distinctively conservative lines enumerates no less than eight different theories of causation each supported by men to whose ideas we are accustomed to give heed, it is very evident that the question is still unsolved. Probably no one theory will ever be found which will account for all cases. But however much we may differ in our estimates of etiologic factors we are doubtless all agreed that the immediate therapeutic problem is a two-fold one. First, we should keep the nose clean and second, we should stimulate the action of whatever glandular tissue remains. The great variation in the latter factor is what renders the prognosis as to ultimate cure so uncertain. My first experience with a stimulant was with thymol in glycerine and alcohol. Later I used ichthyol. I cannot assert from my own observation that mucin has done better than these but I feel convinced that it has been of just as great value and in some instances patients who have been on ichthyol and have seemed to "hang fire" in their progress have forged ahead again when placed on the mucin. This is, of course, a very common experience with all classes of remedies.

Mr. Low's English colleagues are somewhat divided, as far as can be judged by reading the discussions on his various papers, as to the utility of mucin. Some claim that other remedies give just as good results. He is by no means unmindful of the usual regulations to be given to this class of patients being in this matter thoroughly orthodox. He advises them among other things to avoid close and heated rooms and to avoid sitting too near the fire and observes that "it is singular how fond they are of doing just these things." Where possible, he counsels a good brisk walk in the cold morning air with deep inhalations. The domestic practice of indefinite salt-water douching, he strongly and rightly deprecates. Sometimes the solution of one soloid to an ounce of water is a little too strong and requires dilution. When the syringe is used, the head should be over-extended, being thrown as far back as possible, the left hand being used to keep it up by pressure. Thereby is swallowing prevented and the danger of throwing the liquid into the middle ear is avoided.

The general principles stated with reference to the use of mucin in the nose apply equally well to its use in the pharynx and larynx. With reference to the former and the nasopharynx, an additional word is called for. It is well recognized to-day that the pharynx is physiologically allied with the

digestive rather than with the respiratory apparatus and that it has a close relation to the maladies of the former. Mr. Low notes that the secretion of mucus in the nose and naso-pharynx is far in excess of the amount required for lubrication and the function of maintaining moisture in these spaces in virtue of its hygroscopic properties. He declares that this over-abundant mucus is swallowed, is meant to be swallowed and that it protects and lubricates the esophagus and stomach. He also notes that many patients with dry noses and throats suffer from indigestion and constipation. Many of them have the red, dry tongue indicative of deficient protective coating in the stomach. To these patients he gives the tabloids, one before and after meals, finding that they help supply the deficiency of natural mucus coating, and act as a laxative, thereby proving superior to bismuth preparations which protect but are apt to retard bowel action. The supply of the remedy at my disposal has not been sufficient to enable me to do this except in one or two instances and I am not able to express any opinion on this phase of the matter. The point is well-taken however that in order to treat certain types of naso-pharyngitis intelligently we must not fail to take into account the condition of the stomach and bowels.

Finally in the series of papers to which such frequent reference has been made and from which quotations have been freely used, is one entitled "Mucin and Malignancy." The author notes that "the essential lesion in malignancy is the penetration of cells into surrounding tissues but whether this new departure on the part of the cells is the result of a cellular change or of some alteration in the intercellular resisting substance is not yet clear. The probability is that there is a certain degree of both. In old age the intercellular material undergoes a wasting change and as a result of this, its resisting power against the ingrowth of epithelial cells is lessened and thus the onset of carcinoma is favored, particularly as the overlying epithelium remains much longer active, and thus there is an influence inducing the cells to penetrate inwards among the tissues." A series of fifteen cases of malignant disease is analyzed and in each case a deficiency of mucus, a "hypomyxia" to use the author's term is noted. He instances several cases in which the internal and local use of mucin and nothing else partly relieved the annoying symptoms and one case or two cases in which a distinct retrogression of the malignant process took place. He suggests that in patients already operated on the mucin might be used to prevent the recurrence of the malignant process.

XXXVI.

ELECTROLYSIS OF THE EUSTACHIAN TUBE: A FURTHER REPORT.

By Thomas J. Harris, M. D.

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In 1901 the writer had the honor to present before another society a short paper which embodied a year's clinical study with the electro-bougie. This method of aural therapy was at that time comparatively new, although it had been introduced previously in Europe and before that by Newman in this country. It is however due to Duel, who in 1899 recommended its use, with certain important modifications in the technique, that it became known in America.

Duel's results with the method were so satisfactory and his claims so enthusiastic that we were all incited to attempts at imitation. Unfortunately our own conclusions as set forth in this paper were not so favorable.

Since that time the procedure has been tried by a goodly number of otologists, and several critical contributions have appeared, including one by Pierce and more recently a second paper by Duel which shows, it seems to us, a somewhat more conservative attitude but still a high amount of confidence in the value of the method in suitable cases. During the past three years we have continued our study of the method and as the result of such increased experience feel we are justified in a further brief consideration of certain questions in connection with the method which must suggest themselves to every thoughtful investigator. First, what, as a result of our personal experience, seems to be the real value of the method?

*Read at the thirty-seventh annual meeting of the American Ological Society, held in Atlantic City, July 11th and 12th, 1904.

This naturally is the first question asked. In our original paper we drew from our analysis of some 75 cases carefully tested the conclusion that "the electro-bougie has a place in our aural therapy, though a less important one than at first supposed." Our later investigations lead us to regard this as a very fair statement of the situation. The indications for its employment are now well defined. We know that it is utterly valueless in cases of oto-sclerosis and indeed whenever the tuning fork shows involvment of the internal ear. Indeed the use of electrolysis is distinctly limited to those cases of hypertrophic otitis media with characteristic associated narrowing of the Eustachian tube. In a certain number of such cases we are able to give relief to the tinnitus or vertigo and less often to improve the hearing. Unfortunately the large number, in spite of careful selection (and this is of course essential to any hope for success) and patient application of the method, do not so improve. According to Duel's own figures, out of 58 men who reported using the method (28 extensively), over 40 per cent. gave it as their candid conclusion that it was of no real value.

Further, our primary investigation showed what has been borne out by the study of subsequent cases, *i.e.*, that the early beneficial results are too often only temporary and no lasting improvement is realized. That such should be the result a few moments of reflection will show to be but natural. Granting that the most careful treatment has been addressed to the nose and throat and every irregularity of the upper respiratory tract been reduced, no amount of ventilation of the middle ear can hope to effect the organic changes (which have already taken place) in chronic cases. The most that we can hope to accomplish is in a comparatively recent case of otitis media with swelling and narrowing of the Eustachian tube to restore it to a patent condition. This, because of the possible dangers which are liable to arise from the application, should in our judgment only be undertaken when the ordinary celluloid bougie under gentle but persistent use has failed to enter the tympanic cavity.

The Dangers.— Granted now that there is a field for the electro-bougie, though a limited one and that in a certain percentage of suitable cases the results are even permanently beneficial, what shall be said as to the corresponding disadvantages which may render the procedure an unwise and unsafe one?

In the article previously referred to, we stated that "its use is not without danger," and a proper knowledge of the anatomy of the parts and of the technique is essential. Further experience both by ourselves and by others has abundantly justified this conclusion. Duel, as a result of his letters of inquiry, learned of 33 accidents of various kinds. These were from the experience of 58 operators only, representing the pick of specialists in this country. How many accidents at the hands of the hundreds of the unskilled, incompetent, six weeks specialists scattered over the land, we will never know.

These accidents may be conveniently considered under the heads of.

a. Sepsis.

b. Traumatic.

c. Electrical.

a. A number of cases were those of acute otitis. These were probably due to imperfect antisepsis. It is a *sine qua non* to any attempt to employ the treatment that everything used, including catheters and bougies, be carefully sterilized. Even with the most careful preparations we question if it is always possible to secure complete asepis. In our reported case of acute suppurative otitis, followed by mastoiditis, we are confident every precaution was exercised. Certain it is that with the ordinary bougie no such accidents are wont to occur. It has suggested itself to us that there was a previous presence of bacteria in the tube, which only needed an open wound caused by the bougie cutting the mucous membrane to excite inflammation.

b. Traumatism.—Sepsis is not, however, the only condition to guard against. Nine cases are reported of breaking off of the bougie in the Eustachian tube. This is a most serious accident and has occurred in the hands of the most skilled operators, when least expected. A further form of traumatism is wounding of the mucous membrane. This is intimately associated with the third form of accident, namely, those the result of the electric current itself.

c. In order to properly appreciate such lesions we must consider the nature of the electric process. Electrolysis, if we understand it correctly, means the dissolving of the tissues into their component parts by means of the electric current, with the escape of free hydrogen. Such it has been claimed is the action of the gold bougie in the Eustachian tube. In our original communication, we stated that to our mind it

is a question whether the process is a true electrolytic one. Further reflection during the past three years has only served to strengthen this doubt. There is little question that the three forms of electricity may be introduced by means of the bougie: 1st, galvanism; 2d, electrolysis; 3d, galvano-cauterization. It is our firm conviction that many of the temporary beneficial results are due to galvanism acting on the Eustachian tube and the middle ear. No amount of reasoning can convince us that when in two seconds a seemingly impassible barrier gives way, as it often does under the electro-bougie, a true absorption of tissue has taken place; rather has there resulted a stimulation or contraction of relaxed or hypertrophied membranes. We must not fail to recall that this occurs with a current of 1 to 3 milliamperes, which is not concentrated at the end of the bougie but scattered over its entire surface. In direct confirmation of this we know such apparent strictures are often found reformed at a subsequent visit. It is further true, as Dench has pointed out, that many seeming strictures are only rugae or folds of mucous membrane, which may be passed with ease by giving the bougie a different curve. And it is doubtless true that many times the brilliant passing of such strictures is merely a plunging through this mucous membrane. Where higher degrees of current are employed there is always grave risk of producing cauterization instead of galvanism or electrolysis, and we possess no rule when we can definitely say such limit is reached. Any burning is bound to be followed by subsequent adhesions. This, we regret to say, we inadvertantly gave rise to at the pharyngeal mouth of the tube in a patient suffering from a stenosis of the Eustachian isthmus, where no obstructions in the pharyngeal end had previously existed. In such a position the bands could easily be seen.

Similar cicatrices, not located so as to be seen by the examining mirror, are in our opinion, constantly wont to occur in the hands of those who use the electro-bougie, and this danger is continually to be borne in mind.

We would regret to be misunderstood in what we have said. We have endeavored to state our position in an entirely unbiased manner. As a result, however, of our previous investigations reinforced by further observation and study, we are forced to the following conclusions:

First. That there is a certain degree of value in the method, in a relatively small number of cases, notwithstanding that

in the hand of many operators it has proved a disappointment, not merely in its immediate results, but much more in its permanent effects.

Second. The method has shown itself to be attended with no small degree of danger, and accordingly should be employed only after every other means of establishing the patency of the Eustachian tube has been tried and failed—not as a quicker easier way of doing this, without resort to other means.

The most scrupulous attention to antisepsis is essential, and the greatest gentleness as regards current and touch. Indeed we would go further and say it is a procedure which requires the manipulation and skill of an expert in its introduction. Not every one who provides himself with the apparatus, and can bougie the Eustachian tube, is competent to carry it out.

Finally.—In the majority of cases the process is not a true electrolytic one.

XXXVII.

THE PSYCHIC ELEMENT IN DEAFNESS.*

By Boulay and Le Marc Hadour.

Numerous works have been published in recent years upon the auricular manifestations of hysteria, in view of which they are now well known.

We know that hysteria may affect a perfectly normal ear or may become engrafted upon a pre-existing auricular lesion so that deafness is the first and only manifestation of the neurosis (mono-sensory hysteria), or on the contrary it may be associated with mutism or blindness, or that range of epiphenomena occurring in intense, confirmed neurosis.

But that the dynamic trouble occupies the entire clinical picture or that it is super-added to the ear affection is always possible to determine, for it shows its origin by a special sign. Gradenigo and afterward Chavanne have shown the evidences of hysterical deafness: diminution or disappearance of the sensibility of the skin of the canal and membrane, disappearance of perception for high and low sounds, absence of subjective troubles, diminution or disappearance of bone conduction, characteristics which are of unequal value.

Diminution of the cranio-tympanic conduction is constant in hysterical deafness, and when the deafness is total, this conduction is reduced to 0; in all these cases it is less than the air conduction.

Let us recall the very commodious theory of the neurone. In hysteria the central neurone has lost its relation to the principal neurone, so hysterical deafness always reminds us by its characteristics of a central deafness. This clinical fact one of us has already insisted upon in a previous work in the corollary: the absence of subjective phenomena: except when hysteria complicates an old anatomic deafness, the affection progresses without vertigo and tinnitus.

Besides these well defined aural manifestations of hysteria, we meet in many patients with functional troubles which are

*Read before the International Congress of Otology, Bordeaux, August, 1904.

sometimes confounded with these under the rather too comprehensive designation of psychic deafness, but seem to us to be entirely independent of the great neurosis; not only does the deaf patient in question fail to show any of the usual stigmata of hysteria, but likewise the examination of the ears fails to show any of the signs indicated by us.

In view of our study of a number of patients of this kind, we desire to express the value of this fact that in a large number of deaf patients, who may have had an initial provocative auricular lesion, there is a psychic element which contributes in a variable way more or less to augment the degree. A purely functional trouble is added to the organic trouble, causing increased deafness.

Deafness is complicated in a large number of cases by a certain degree of inattention. The patient ceases to listen, convinced that he cannot hear, and so isolates himself from the external world. This is, so to speak, a simple audition renouncement. When he is awakened, when his attention is attracted, he will hear perfectly what has previously escaped him.

Two things are necessary for audition, an auditory organ which receives and records the sound and a brain which interprets it. If the brain is not in action, the ear is a sort of useless phonograph without an auditor.

Among the nervous, this inattention ends by taking a very important place in the psychology of the patient; it creates an abnormal obsession of hearing power, a true auditory aboulia, which considerably increases the real trouble.

Sometimes it is restlessness which takes hold of the patient, he fears that he will lose his hearing; he is in a state of real anguish which excites the psychic functional trouble and increases the deafness. There is a true vicious circle; the deafness excites the anguish and this emotional state augments the deafness. Thus a real *phobia* is established little by little.

Auditory aboulia and auditory phobia are the two forms of these psychic troubles. For a long time it has been known that deafness causes a peculiar cerebral state—a special mentality. Believing in the futility of his efforts to hear, the deaf patient ceases to listen. What is at the onset simply a defect of attention becomes later a habit and deafness thus provoked

is acquired and lasting. It is really a psychic deafness from self-observation.[1]

After a while a new phenomenon intervenes: the organ of audition, on account of its lack of exercise, loses its property of hearing as a member which has been inactive for a long time loses its customary function. It is upon this remark that Urbantschitsch has founded his method of re-education of the hearing by auditory exercises.

There are two phases in the evolution of these functional troubles superadded to the ear lesion:

1. A psychical trouble which has an ear affection for its point of departure is established in the patient and under the influence of this psychical trouble the ear loses more and more its habit of hearing and is diverted from listening.

2. Under the influence of this want of attention there is produced an inactivity, a paresis of the auditory nerve or of the center through default of exercise.

The two phases can only be artificially separated; they are reciprocal. In reality the psychic element always plays a role. As we said before, by a sort of vicious circle, the deaf patient hears less and less by reason of the inactivity of the auditory nerve, he believes that he is more and more incapable of hearing and by an interrupted psychical effort gives up more and more his power of hearing.

What holds good for the extremities in ataxia holds good for the ear. The real lesion is often less extensive than the functional troubles would lead one to suppose, and in awakening by education the attention to the useful movements, it is necessary to teach anew the utilization of these members.

It is somewhat analogous to the systematized psychical akinesis as abasic astasia which Sollier compares to a variety of amnesia.

Our patients forget to listen and sound does not awaken the attention of the auditory center.

We have found sometimes in these patients a restlessness, an anguish when they tried to hear, an emotional state which ought to group these cases with the phobias and obsessions. The patient fears he cannot hear and he does not hear. This state of inactivity of the auditory centers has been especially

[1]F. Heckel. Surdité neurasthenique surajouteé à une lésion tubaire légére. Arch. int. de laryng., 1904, p. 135.

studied in deaf mutes. Delean, in 1843, then Krugelstein, who gave the picturesque name of auditory stupidity to this state, Urbantschitsch whose name remains attached to the method of auditory re-education, Gelle, Natier and the Abbe Rousselot, Astier and Aschkinasi, etc., are again and again in evidence. But it has not only been in cases of deafmutism or deafness that it has been observed. An analogous psychic trouble is often met in those slightly deaf, in those whom we are called to treat, namely, in the nervous, who being convinced that they can not hear, do not listen and become afflicted with phobia and loss of hearing.

In the rare cases, which are particularly instructive because they demonstrate the question, the psychic trouble may occasion complete deafness, identical to that which we meet in affections of the internal ear. We meet, besides the extreme and the very light cases, all the intermediate forms.

The paradoxical results of testing hearing most often makes the diagnosis possible. We observe, for example, that the patient who hears voice poorly hears the tuning fork and watch well, and from this disproportion we get the idea that there is a psychical trouble, or a suspended nervous element. During the voice test, the patient being convinced that he cannot hear, does not listen. The tuning forks, on the contrary, surprise him, awaken him, and the sound is perceived. The same thing oocurs that is seen in an agoraphobic who in the midst of a discussion will pass without doubt a road which he would tremble to pass if his attention had been called to it.

The examination, in a word, will show those contradictions which mark these nervous troubles, those inconsequential characteristics of pathologic physiology which are met in hysteria.

At times there is an unexpected amelioration, out of all proportion to the means employed, which permits the diagnosis of auditive aboulia to be made, emphasizing the role of suggestion in the improvement. We have seen more than once, for example, the hearing of a patient whom we were testing, double after simply bathing the auditory canal with menthol, which gives a subjective feeling of freedom to the ear. Often the movement of the membrana tympani, under examination, with a Siegel speculum, re-awakens the auditive will, although only a modest examination was contemplated.

In certain cases, finally, the auditive phobia will reveal itself to the trained examiner by the restless manner affecting the

patient during the examination. An observation of the patient as one speaks to him is sufficient to show that there is a psychical trouble added to his true deafness.

These psychic affections are found as often in men as in women, more often in the educated and intellectual than in the simple; in those subject to disease of the will, both as a sequel to cerebral overwork and of their nervo-arthric heredity.

The psychical element is installed most frequently in an insidious manner upon the ear affection; it may, in certain cases, manifest itself suddenly under the influence of an emotion or a traumatism. As a result of a traumatism there may remain a phobia, an obsession, as it is often the point of departure of hysteria. We have at present a patient who does not present any stigma of hysteria and who became deaf in consequence of an injury. He had at the onset stasobasophobia[1], that is to say, an abasic astasia with fear; he was cured by suggestion and re-education of his motor phobia, but he has a marked psychical deafness of the same nature.

Hearing for speech is nil, the patient hears a sound which does not signify anything to his mind—he does not interpret it, and this deafness is accompanied by normal bone conduction. Improvement is taking place by reason of suggestion and training.

Case 1. *Complete nervous deafness of the right ear, partial deafness of the left ear for ten years.* Maurice X, aet. 19, was brought to us for a nasal obstruction due to hypertrophic rhinitis. During treatment we observed that his hearing was very poor and we learn that he has been completely deaf in the right ear and that his hearing has been bad in the left since he was seven years of age.

He has been examined at various times and has followed various plans of treatment, but without result, and further treatment had been discountenanced on the ground that a central deafness was present.

Affections of the internal ear are uncommon and we examined the patient without any intention of revising the diagnosis, but as a simple scientific curiosity.

Objective examination showed both drums slightly retracted: the external process projected, the handle of the hammer is thus placed backwards, there was a posterior fold and the light re-

[1] Sainton-Stasobasophobie, Gaz. des hôpitaux, Jan., 1903.

flex was absent. This is the classical picture of chronic catarrh of the middle ear and we found its origin in the red secreting pharynx and in the nose, which on rhinoscopy disclosed two large hypertrophies, which caused him to consult us.

Examination of hearing showed the following:

Watch, left ear, 15 centimeters; right, 0.

Whisper, left ear, 5 meters; right, 0.

Loud voice, left ear, very good; right, 0.

On the left side there was a diminution of hearing in proper relation to the findings of the objective examination and just what is to be found in a slight chronic catarrh of the middle ear, but on the right there existed a complete deafness such as is found in labyrinthine disease.

The tuning fork tests show the following:

The Weber was indifferent!

On the left side the Rinne was negative, with very slight augmentation of the duration in favor of bone conduction. Schwabach very slightly increased. On the right side, much to our surprise, the tuning fork was heard by air conduction in the normal fashion, while the loudest voice could not be heard. Rinne was negative, as on the left side, and Schwabach slightly prolonged.

We found in this all the signs of a slight affection of the middle ear, but nothing indicating labyrinthine deafness.

The low pitched tuning fork is well heard on both sides. The high pitched fork is not heard in front of the meatus or upon the mastoid of the right side. The patient stated to us without having his attention called to the tonality of the instrument, that we were wasting our time in trying to make him hear a high pitched sound, as he could never hear the flute in an orchestra. To our astonishment neither the high pitched fork or the Galton whistle could be heard on the left side, which was but slightly deaf. We had a real paradox. There were the internal ear normal, while the Schwabach was prolonged, and there was a lapse in the scale of tones in which the high pitched notes were absent. There was no diminution of the duration of perception of high pitched tones, but an absolute suppression of the auditive function for the high pitched.

In view of these paradoxical observations, we began to think of a nervous affection rather than an anatomic lesion of the internal ear. We interrogated the patient from the subjective point of view, but he declared that he had never had vertigo or

tinnitus. We hardly think of affections of the middle ear developing without Meniere syndrome. More and more we became convinced that it was a nervous affection engrafted upon an ordinary otitis media. The patient was of the emotional nervous type and had since childhood a marked defect of pronunciation, with stuttering. Was he a hysteric? We searched without result for the stigmata of this neurosis. We found no sensory disturbances of the skin or mucous membranes. The auditory canals and tympanic member were of normal sensibility. We felt authorized to make a diagnosis of nervous deafness, but without exact signs.

It was not hysteria of the ear, for we could find none of the clinical characteristics, diminution or disappearance of bone conduction. We decided to try the effect of suggestion and we prepared the patient for electrical treatment. We told him that the auditory nerve is re-awakened by this therapeutic agent and we commenced the re-education of his right ear. During these painful seances the attitude of the patient was characteristic. Hardly had we pronounced a word or a figure when the patient began to move on his chair, rubbing his hands twisting his legs, tossing his head and giving such marks of restlessness. With a nervous laugh, he cried "No it is not that, it cannot be, repeat," while he suggested any word or figure whatsoever. After a long time, he ended by repeating the word pronounced. This result was only obtained after repeated encouragements. He had appearance of anguish—the word came from his mouth with grief, timidly and as if with regret. In the happiness of having heard well the patient became calm and declared that he had heard well the first time, but that he dared not repeat it because he thought he could not. This agitation, this fear which seized the patient when he wished to repeat a word showed the state of phobia found in such an affected subject and in one affected by agoraphobia when brought into open place for example. We had our patient, who was considerably improved, examined by our confrere and friend, Dr. Sainton, chief of the clinic of the faculty. Our confrere after a minute's examination confirmed our views—that he did suffer from hysteria, but from a phobia, that he was afraid to repeat what he hears and that he was persuaded that he could not hear. Our patient had no disease of the ear, only an affection of the will.

Little by little we succeeded in awakening him and in forcing his will; we obliged him to hear and he made tremendous

progress. The high-pitched sounds which the patient refused to hear, were at length perceived and, an interesting fact, their perception was at first very disagreeable. After some weeks of training the result was excellent, hearing of watch being 30 centimeters on both sides; whisper 6 meters both sides; loud voice, heard well.

It is seen that hearing, for the watch, was doubled on the left side, going from 15 to 30 centimeters, figures which indicate the part played by the physical troubled superadded to the slight catarrh of the middle ear. Weber remained indifferent. Rinne feebly negative. Schwabach slightly prolonged.

Here, then is a slight chronic catarrhal otitis media upon which is engrafted a phobia, a psychical trouble, which on one side doubled the real deafness and on the other caused absolute deafness for voice.

The young man was forced to quit college and his family was much concerned as to what career he should embrace. Now he works in a commercial house, keeps in touch with his clientele, hears well, telephones, in a word he has taken up a normal life.

The coincidence of stuttering with deafness is, we think, quite interesting. The stutterer belongs often to a large family of nervous defective, which recruit the suffering from phobia and aboulia.

While we have an extreme example of psychical deafness, it is a pathologic rarity. The cases which follow, in which anatomic deafness is aggravated by a superadded functional deafness, represent a common type.

Case II. Miss D, aged 19 years, has heard poorly for some years, how long her mother is unable to say with precision. She has little tinnitus which is of feeble intensity. Watch test, right 0, left 4cm; whisper 0.5 cm. on both sides; bone perception slightly diminished. The diagnosis is sclerosis in process of evolution.

The mother remarked that her daughter was very inattentive. When a conversation interested her, she was able and seemed to hear sufficiently; if on the contrary she was not interested, she was absorbed in herself, isolated herself from the conversation and affirmed that she did not hear when in reality, she did not listen.

With the consent of her mother, we undertook to persuade her and to demonstrate to her that she heard better than

she thought and to convince her that it was necessary to exercise her hearing. In order to stimulate her will, we added catherization and massage of the canal. In one month we obtained the following results; Watch, right side, 4 cm.; left 10 cm.; whisper one meter on both sides. Here was an amelioration small but relatively considerable; hearing for whisper was doubled. The patient found that she was improved and followed conversation better. The good result might be ascribed by some to the local treatment; this would be wrong, for we only simulated in using the catheter without using inflation and only did this for the purpose of suggestion.

The improvement only shows the psychical element and measures it exactly. The aural affection has resisted all our therapeutic efforts. We cannot deny that the improvement was due to the suggestive treatment.

Case III. Mrs. A., aet. 68, had suffered from an attack of grippal otitis media suppurativa acuta on the right side. For two weeks the patient was entirely deaf and then she improved. At the end of two months, hearing had returned on the left side, but the right was still deficient, the watch not being audible on that side. The tympanic membrane had a normal appearance except that the rosy tint persisted; the perforation was closed.

Upon inflation with a catheter, the watch was heard at two centimeters. This improvement was of very short duration, sometimes disappearing before she left the office and the patient lost hope. At different times, the same thing happened, the improvement was immediate but ephemeral.

The state of inquietude of the patient, the strange manner of improvement, so rapid and so fleeting, made us think of a psychical trouble. In order to prove this we washed out the nasal cavities without catheterization and we told the patient that she ought to hear the watch. In fact, she heard it as after catheterization. We continued this purely suggestive treatment and improvement in audition took place day by day and hearing for watch increased to 30 cm. This improvement continued without the former recurrences.

The catheterization practiced in the beginning had only acted as a suggestion just as the nasal douche—purely as a suggestion treatment.

We could multiply these examples and could cite cases in which the improvement passed through various stages, explainable by the state of the patient's mind.

When in the course of a test for hearing the patient fails to hear some words, he is greatly discouraged and his deafness seems to have increased in intensity. This has already been reported by Eitelberg[1] and shows at once the influence of the psychical state upon deafness.

Sometimes it will happen as in the re-education of an abasic astasic that the patient has a fall. This fall destroys his confidence, the phobia reappears, interfering with the cure.

Is it not explainable upon psychical grounds that there may be improvement of hearing on one side when an operation is done on the other?

In resume, there often exists in nervous people who have an ear affection adventitious psychical trouble which augment the real deafness in a variable degree.[2] We meet more rarely with pure psychical deafness.

This is not hysteria of the ear and these patients do not present any stigma of this neurosis—it comprises a class of nervous impressionables who belong to the great family of neurasthenia, aboulia and phobia.

Sometimes the improvement which we obtain by various methods of treatment are only due to the disappearance of the superadded trouble. We act by unconscious suggestion. The psychical trouble ends by causing a functional trouble, a certain inactivity of the auditory nerve and of the nerve centers and the methods of re-education act upon the functional trouble by awakening the auditory attention.

The method of Urbantschitsch is a triumph of otologic etiology, either by means of tuning forks or sirens. This special therapeutics has formal indications which are important but it only applies to particular cases. We can draw from the cases a practical indication.

If it has been prolonged for weeks and months by useless catheterization, it is then necessary to look for a nervous ele- after the last time we saw her), she had an intense fever (102 F. in the axilla) and at the same time she suffered a ment in the deafness which we are treating.

We do not tell a nervous patient that there is nothing the matter and we must not show in a definite manner that we

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[1]Eitelberg—De influence de la neurasthénie sur les affections de l'oreille. Ann. des mal. de l'oreille, 1893, p. 835.

[2]Gellé Trois faits de trouble de l'ouie liés a une nevropathie, Ann des mal de l'orelle, 1892, p. 924.

are using this method of treatment upon one suffering from auditive aboulia or phobia.

These patients are already induced not to use their ears and we will often, very often, be of service in getting them to use their ears and in causing by aural training, by suggestive encouragement, a disappearance of the psychical element superadded to their true deafness, against which we are too often powerless. We should not forget that it is only the worst of the deaf who cannot hear and that we may treat in an effective way the diseases of the will by suggestion and re-education.

XXXVIII.

ACUTE OTITIS MEDIA CAUSED BY INFLUENZA IN AN ADULT. NO SPONTANEOUS OR ARTIFICIAL PERFORATION OF THE DRUM. PUS EVACTUATED BY THE EUSTACHIAN TUBE. RAPID CURE OF THE OTITIS. CONSEQUENCES.

By Dr. George M. Didsbury.

PARIS.

History: Mrs. R., 50 years of age, mid-wife, a healthy and strong woman, after several days of sickness (very likely influenza), had severe pains in the left ear on the 19th of December, 1903, at 5 o'clock in the evening, with very marked deafness, very intense tinnitus and at the same time a feeling of fullness, with pain behind the ear. On the next night and the next day no change was observed, but in the evening (that is to say one day after the beginning of the disease), the patient expectorated some pure blood which came from the nose and fell down in the mouth, followed in a few moments by expectoration of pure pus. We must say that the only interesting features of this history were told us by the patient and that if we believed them, it was on account of her medical knowledge and her veracity.

An immediate relief of the ear symptoms followed this evacuation, relief from the pain, the feeling of fullness and the tinnitus. The next morning the patient spit up pure pus without any blood.

December 25th, the relief of the ear was in proportion to the evacuation of pus which continued. The hearing was a little better. The mastoid pain, which had been very great in the beginning, was less acute the day after and could not be elicited even on pressure upon the bone.

Ear Examination: The drum was red and bulging; no perforation, no pains in the external ear. We did not think that a paracentesis was indicated in view of the rapid relief

of all the symptoms. Dressings soaked in hot water were applied on the ear and on the neck and a catheterization was prudently done in the deaf ear which brought some relief.

December 23. The nasal discharge still continues and the patient blows pus from her nose and expectorates pus. The mastoid bone continues painful and on the day before was somewhat swollen. The hearing has improved a little; persistent tinnitus.

During the night of the 23rd of December tinnitus had been accompanied by shooting pains until two o'clock in the morning. The drum is still red and bulging.

December 30th (eleventh day from the beginning). The nasal discharge is progressively diminishing, the hearing is now good. The drum is normally colored in the most important part, except in the superior portion which is still red.

The treatment has been as simple as possible; only liquid vaseline with boric acid and menthol into the nose, with catheterization and gentle inflation of the Eustachian tube.

January 3rd, a small quantity of pus is still blown out. From the 4th to the 11th of the same month every day a vapor of liquid vaseline, was blown into the tuba eustachii. The patient started for Nice the 11th of January with the drum absolutely normal and the other symptoms completely disappeared.

Three months later, we saw our patient again and she told us the following facts: At the end of January (three weeks after the last time we saw her), she had an intense fever (102° F. in the axilla) and at the same time she suffered a great deal about the cheeks, the forehead, both eyes, and had an abundant discharge from both nostrils.

The discharge appeared only a few hours after the pains and the handkerchief was spotted with a green color. These phenomena lasted ten days, during which she did not see a physician and only snuffed up hot salt-water and used vaseline with boric acid and menthol. During this time the left ear, originally affected, did not show any symptoms.

From these facts, the fever, the pain, the abundant discharge from the nose, we had thought that the disease had been very likely a double fronto-maxillary sinusitis, cured very rapidly by itself; for on April 11th, when we saw our patient again we could not find any symptom of sinusitis; no pus in the nose; the illumination was perfect; there were no pain and no perturbation of the eyes. However the mucous

membrane of the right and left turbinated bone was red and swollen especially the left side.

April 25. Again our patient had some fever and pain in the left side of the nose; the left turbinated seemed to be the seat of an absess; it was red and swollen. The opposite side was normal. A few days later, the patient blowed a spoonful of bloody pus from this nostril; complete cure a few days after. It had been impossible to see the hole by which all this pus could escape. At last, as a final episode of secondary infection a small boil appeared at the nasal vestibule. A few days after this, spontaneous evacuation occured and without any treatment, it entirely disappeared.

Conclusions. The most remarkable point in this story was the spontaneous evacuation of the otitic pus by the Eustachian tube and the rapid cure of this otitis media acuta.

The improvement obtained at the outset had been so marked that we did not at any time think it advisable to do a paracentesis. The affected ear was cured or seemed to be cured completely in three weeks (short time even for an aural affection, generally speaking).

If the question as to the ear seems to be solved, it is not the same if we consider the consequences which appeared a few days after the cure of the ear trouble. Though, in our particular case the consequences were not dangerous and the cure obtained without intervention, it may be asked if it would always be the same and if the surgeon who sees an otitis media acuta spontaneously emptying in the Eustachian tube ought not to perform a paracentesis, to make the pus take the right way, that is to say, the external canal.

We know, indeed, that the Eustachian tube opens at the superior part of the drum, and then extends to the superior wall; in that case the evacuation is probably produced when the drum is filled with pus, or when the Eustachian tube is wide or when an anomaly exists.

An objection that one may make, that the paracentesis apparently useless, is that the pus which chooses the Eustachian tube as a drain pipe will always use that same way even if it was running through the external canal. But under these circumstances, if in spite of a paracentesis, infectious local disease appears, the otologist will have nothing to regret.

One may object also that the pus may be especially virulent and that this virulence could be previously estimated, but we

must point out that these evacuations occur generally out of the view of the surgeon and are often unknown to him, that the pus which is expectorated into an handerkerchief and mixed up with blood or other secretions makes all bacteriologic inquiries difficult and doubtful.

Rue de l'Arcade.

XXXIX.

EXAMINATION OF THE EARS OF RAILWAY ENGINEERS AND FIREMEN IN RELATION TO THE LENGTH OF SERVICE AND THE FUEL EMPLOYED IN ROUMANIA.*

By Dr. M. Costiniu,

PHYSICIAN TO THE ROUMANIAN RAILWAYS.

The works of various authors, such as Moos, Zwaardemaker, Schwabach, Guye (of Amsterdam), Pollnow, Gradenigo, Bloeckaert, Castex and others, communicated to different Railway and Navigation Congresses and International Conferences, have thrown a clear light upon nearly all that relates to railway engineer and fireman and the organs of hearing—the influence of these professions upon hearing, with all consequences. Little can be added, but peculiarities which I have observed in Roumanian engineers and firemen appear interesting to me, and I have the honor to lay them before you, asking your opinion or decisive action if you deem it necessary.

Up to the present all authors, at least those familiar to me, have concerned themselves with most causes which induce diminution of or defective hearing through locomotive service, but I have never known them to investigate the influence upon the hearing of the different fuels employed.

With us, up to 1888, wood and coal only were employed for firing, especially wood. In that year the machines began to be changed for the use of crude petroleum, and later, in 1896, the joint use of crude petroleum and coal. At the present time we have 9 engines fed with crude petroleum, 234 with petroleum and coal, and 139 with wood and coal.

Considerations of an economic character have led our engineers to employ this combination. As our country produces oil they regard it as less expensive and more convenient.

*Communication to the Eighth International Congress of Otology, Bordeaux, August, 1904.

Russia has furnished an example. Since the introduction of crude oil as a combustible, nearly all the engineers and firemen complain of the great noise made by this fuel and claim that it has a bad effect upon hearing, vision, and even upon the nervous system.

To convince myself of the truth of these affirmations. I undertook a series of journeys upon the engine, both with ordinary and fast trains, for distances of 56 to 260 kilometers, lasting 2 to 6 hours. To make comparisons and draw conclusions, I rode upon engines fired with the various fuels mentioned. All these journeys were made with the engineer and fireman to the terminus. I examined their ears and noses upon leaving, arriving and returning.

The first journey was one of 56 kilometers, taking two hours. The machine was fired with crude oil and coal. Coal in small quantities was thrown in every 3 to 5 minutes to spread out and re-enforce the heat. En route I immediately took note of the very intense noise produced by the burning of the oil.

The noise was so great that I could not understand the engineer except by approaching him to 10 or 15 cm. and speaking loudly. Aside from this noise there was also another produced by the whistle, which was strident, increasing with each stop of the train. The Westinghouse brake made still another, resembling that of a rocket. Imagine all those noises, combined, or alternating with that made by the vibration of the machine itself, and you can form an idea of the resulting discord. Because of these multiple noises the go-ahead signal of the conductor by whistle or bell could not be heard, so that the engineer always had to look at the conductor who was obliged to signal with his hand by day and a colored lantern at night.

I asked the conductor to approach nearer to the engine, and only at a distance of 10 to 12 meters could he be heard.

During the run I asked the conductor to give signals from coaches more or less near the locomotive, with bell or whistle, but it was impossible to hear anything.

The noise appeared to me more intense as we progressed, so that upon arrival I could not well stand upright; the noise was continually in my ears; the auditive acuity was diminished.

The engineer and fireman felt hardly any inconvenience

except the noise in their ears. They told me that after ten or fifteen minutes they felt nothing else abnormal.

At our departure I had examined the ears of the engineer and found the right normal. The left drum was opaque. Whispered voice was heard at 5 meters on the right and 3 meters on the left. The watch tick was 1.50 meters on the right, and 80 cm. on the left. The nasal mucosa was slightly congested.

The fireman, who was younger, showed nothing.

On arriving I examined them again and observed only congestion over the handle of the malleus, more pronounced in the engineer. His hearing was diminished but not the fireman's; the nasal fossae were full of dust.

I felt constantly ill at ease with vertigo and a tendency to vomit. A rest of 20 minutes restored me. Half an hour later I again examined the ears of my subjects and found that the congestion had almost completely disappeared.

After a rest of 7 hours we returned, and on arriving I observed the same thing.

Where the track was down grade and the train sped on with its acquired momentum, the oil cocks were shut off, the noise instantly ceased, and I had a very agreeable sensation.

Four days afterward, I made another journey of 198 kilometers on a fast train in 4 hours.

Proceeding as in the first case I observed the same thing but to a less degree. I attribute this to the fact that on the one hand I had become accustomed and on the other hand that the noise made by the burning oil, the Westinghouse brake and even the whistle were not so loud. It was explained to me that noise made by the combustion of the petroleum is louder when the coal is not uniformly distributed over the grate, thus allowing a stronger current of air.

The third journey (5 hours) I made on an engine fed only with wood and coal. Here I was very comfortable: there was only the sound made by the vibrations of machine itself. The membrane showed little congestion over the handle of the malleus.

The fourth trip I made in the night on a fast train for 260 kilometers in 8 hours. The locomotive was fired with crude oil only. The noise was more intense than in the other trials. It was almost impossible to understand words, and signs were used. Besides the annoyance previously mentioned, there was another when the door of the fire box was

opened to regulate it, the light was so bright that immediately after and for 20 or 30 seconds one could not see.

Upon arriving I was weak with the fatigue and noise. The engineer and fireman being accustomed were less so. Their drums were somewhat congested and their auditive acuity diminished one third. After a rest of 15 hours their drums were almost normal, and hearing regained.

Such are the facts observed. It might reasonably be expected, a priori, that the noise made by this fuel would be harmful to the hearing and the nervous system. The repeated congestion of the tympanum and the vibrations of the machine ought to induce certain and rapid deafness. But the facts are not thus, as the following will show:

Dr. E. Clement, the physician-in-chief to the Roumanian railways, cognizant of the complaints concerning the fuel employed, suggested to the managment a periodical examination of the vision and hearing, every three years. We have taken as normal the person who can hear whispered voice at 5 meters and the watch at 80—100 cm.. Examinations were made by local physicians and they were required to send to the central bureau any employe who had the slightest defect of hearing or sight. Here after careful examination the case was decided. This test, made for the first time in 1901, upon 902 engineers and firemen, showed only one engineer and one fireman to have pronounced deafness and tympanic sclerosis. But these were over fifty years old and had been more than twenty years in the service. They were laid off. We also found two engineers, aged 45 and 50, in service 16 and 18 years, in whom whispered voice was heard at 50 cm. and the watch, applied to the ear. As their general condition was good they were given work which did not imperil the public.

We have found 52 agents whose hearing was slightly impaired, either in one ear or both, but such that they could remain in the service. To be on the safe side, it has been ordered that these agents be re-examined every six months. At these examinations we found only two whose hearing had diminshed; the others were stationary, some even improved as the result of treatment.

This year (1904) a new examination has been made and we have found 8 more agents with slightly impaired hearing, who will undergo tests every six months.

Of the 902 engineers and firemen 637 were in service when

the change to crude oil was made; only 265 entered after that date, 1896.

Of these latter at the examinations made in 1901 and 1904 we found only 8 with the slightest impairment; these are permitted to continue in the service on condition of re-examination every six months. Two of them were discovered this year and six in 1901. In the latter hearing has not changed since between 33 and 36; the others were from 40 to 59 years of age.

Comparing the percentage of old and new agents, that is to say before 1896 and after, we find that 8 per cent of the former and 3 per cent of the latter have alterations of hearing. But we must remember that the former have been in service at least ten years, the latter not more than eight. The age is also to be considered, 5 of the 8 being over 40. This also applies to the agents, who are over 45, as wel as in the service longer.

The employment of this fuel being relatively recent with us, we cannot draw definite and infallible conclusions; however, from our observations we may say:

1, Comparing the three kinds of fuel mentioned, it is incontestable that, so far as hearing is concerned wood and coal are preferable to crude oil, unless some mechanism is devised to lessen the intensity of the noise made by the latter.

2. The noise made by the combustion of petroleum is more intense when employed alone, and when the coal is not evenly distributed over the grate.

3. This noise together with that made by the machine itself, the whistle and the Westinghouse brake is capable of accelerating the evolution of ear affections in those predisposed if neglected. Intemperance may be added to this.

4. Habit plays an important role. They become so accustomed to the noise that it seems abnormal not to hear it.

5. Another factor in their favor is that the congestion observed during the journey does not persist. After 20 or 30 minutes it disappears, and after a rest of a few hours everything is all right.

6. It is necessary that the auditive acuity be good, especially to hear the derangements of the machinery which may take place, because we have elsewhere seen that the noise is so great that one cannot understand either the bell or whistle, only petards.

7. It appears that the impairment of hearing depends rather

upon age and the number of years of employment upon the engine.

8. The burning of crude oil may, more rapidly than other combustibles, predispose to neurasthenia and dimness of sight.

9. The time in which these observations were made is too short to draw numerous or precise conclusions; however, at the moment the facts observed appear to me interesting enough to engage your attention.

I will continue my observations and when I have more numerous data and new facts I will make them known.

XL.

FURTHER INVESTIGATIONS INTO THE DIAGNOSTIC SIGNIFICANCE OF THE POTASSIUM SULPHOCYANIDE REACTION IN THE SALIVA OF PATIENTS WITH EAR AND OTHER DISEASES, AS WELL AS THE OCCURRENCE OF PTYALIN IN THE SALIVA OF PATIENTS WITH EAR DISEASES.*

By Dr. Edwin Jurgens.

The author reviews the literature bearing upon this subject, also the chemical reactions of potassium sulpho-cyanide (Rhodankalium). In his earlier investigations he collected the saliva on a cotton pad, but in his later work he has used Heidenhain's saliva tube, which he introduces into the duct of the glands. The author always uses the reactions of Treviranus and Solera. These reactions are as follows:

1. Treviranus combines the saliva with two to four times the amount of alcohol, slighly warmed, filters and evaporates the alcohol. To the residue he adds ferric chloride (F_2 Cl_6) and hydrochloric acid (HCl). If positive, a deep blood red color appears, which does not disappear by heating, but does disappear on the addition of a solution of mercuric chlorid (Hg. Cl_2). It is necessary to exclude the possibility of any other organic acid as acetic, formic, salicylic, and especially meconic, which is found in the saliva of opium users.

2. Solera uses a saturated solution of Iodic acid (HIO_3) or what he thinks is better, iodic acid powder, with a starch solution. This gives a blue color in the presence of potassium sulpho-cyanide. In explanation of the resulting reaction, Solera gives the following chemical formula:

$$5\,K\,C\,N\,S+7\,H\,I\,O_3=5\,K\,H\,S\,O_4+5\,C\,N\,I+I_2+H_2\,O.$$

The following conditions should be taken into consideration in using this reaction for human saliva. Does the patient smoke, or use bitter-almond, cherry or opium preparations?

*Abstracted from the Monatsschrift für Ohrenh, May, 1904, by E. E. Foster, M. D., New Bedford, Mass.

The smoking of cigars, cigarettes and papyrus, but not the chewing of tobacco, increases the reaction, as does also the use of bitter-almond and cherry preparations. The use of opium does not change the quantity of sulpho-cyanide, but disturbs the iodic acid reaction.

Muck (Munchener med. Wochenschrift 1900 No 50) was the first to report investigations touching the alteration of the quantity of potassium sulpho-cyanide found in the saliva of patients with chronic middle ear inflammation, with the idea of the inflammation affecting the chorda tympani and plexus tympanicus, and thence the salivary glands.

In March, 1901, the author published in the Russischen Wojenno Medicinski Journal the following conclusions as a result of his first investigation:

I. In otitis media chronica purulenta of one or both ears the reaction for sulpho-cyanide was negative.

II. Acute and subacute inflammation of the middle ear, with severe course, reaction negative.

III. He has positive results (a) In all patients without middle ear disease. (b) In acute inflammation of the middle ear with good recovery. (c) In subacute, without severe symptoms.

IV. He also has positive reactions in cases with destruction of the middle ear and especially of the mastoid.

V. One case of otitis catarrhalis gave positive results.

VI. Positive reactions in dry perforations of the drum.

VII. The reaction cannot with certainty be foretold by an examination of the ear.

VII. The reaction can be used as an aid in making a prognosis; bad when the reaction grows weaker from time to time, good when the reverse occurs.

Alexander and Reno published October 16, 1902, (Wiener klin. Wochensch.) their observations on the value of the reaction in 85 cases with ear disease, with following conclusions:

I. The potassium sulpho-cyanide reaction in the saliva of patients with ear disease is of conditional diagnostic value.

II. There is no reaction immediately after a radical mastoid operation. It appears usually four weeks after the operation and indicates a good recovery.

III. A destruction of both tympanic plexuses can produce a permanent loss of the reaction.

IV. The reaction has no prognostic value.

Alexander and Reno also found that external diseases of

the ear have no influence upon the salivary glands, and that a disease of one ear can produce a decrease in the quantity of sulpho-cyanide secreted by the glands of the opposite side, probably by a connection between the tympanic plexuses of the two sides.

The author reports in his present paper 53 cases with ear disease and 28 cases with other than ear disease, such as pneumonia, typhoid, acute articular rheumatism, empyema, etc., all with negative reaction, while erysipelas facialis, influenza, and anemia gave positive result.

The author arrives at the following conclusions as a result of his last investigation:

I. When sulpho-cyanide is found in the parotid saliva of the diseased side, it is quite certain that the corresponding middle ear is sound or only slightly affected.

II. Complete absence of sulpho-cyanide in the saliva of a patient with ear disease is a good proof that the middle ear is badly involved and chronic in character, of course other causes for a negative reaction having been excluded.

III. The weakening of the reaction shows, in accordance with the degree, a more or less severe condition of the corresponding side, and is a good indication of the severity of the disease.

V. In an apparently healed middle ear inflammation, if the reaction does not appear, it signifies a) that the tympanic plexus is completely destroyed or b) that the disease is really not healed and sooner or later will again appear, and c) a recurrence of the reaction, that the disease process in the middle ear has certainly ceased.

VI. In cases where the middle ear cannot be seen, the reaction is of value in making the diagnosis and prognosis of the disease.

VII. The presence of ptyalin in the saliva does not depend upon the action of the tympanic plexus, and is quite independent from sulpho-cyanide in its production.

Where sulpho-cyanide failed (in the cases reported) ptyalin was always present.

The author made the same observation as Alexander and Reno, that in severe middle ear affections of one side, the reaction in many cases failed on the sound side. He accepts the explanation of Alexander and Reno.

XLI.

THE NECESSITY FOR OBLIGATORY INSTRUCTION IN OTOLOGY IN THE UNIVERSITIES.*

By Professor G. Gradenigo.

Such a large congress as ours, in which the aurists of the entire world take part, could have no more worthy aim than to concern itself with the practical state of our specialty, and consequently with the efficiency of the otologic instruction in our Universities.

Everybody who examines, without preconceived ideas, the actual state of medical instruction is struck by the fact that the pathology of so important an organ as the ear has been removed from the schedule of compulsory studies; in other words that it has been deprived of its only efficacious sanction, compulsory examinations. Everyone knows that to make a specialty an elective, is to assign to it a limited value. The student in the midst of what he has to do, is unable to select subjects which will be truly useful from a professional standpoint, and he devotes all his time and energy to those which are classed as indispensable, without concerning himself with the others. So, in spite of the efforts of conscientious teachers, who possess the more merit since they labor under unfavorable conditions, most young doctors on leaving the universities, possess the most elementary ideas on otology. The wonderful progress of this specialty, and the frequency and gravity of aural affections make the contradiction between university instruction and the demands of practice inexplicable and flagrant.

The causes of this fact are many; we will first mention the relatively recent date that otology asserted its autonomy, then the isolation in which these rare specialties have been for a long time, remaining strangers to the hospital movement, and so to speak holding themselves aloof from the professional life

*Read before the International Congress of Otology, Bordeaux, August, 1904.

of large centers. We must also remember that there was a lack of therapeutic results obtained by aurists, who did not see the patient until the disease was too far advanced, and that surgery was far from being as successful as now. Finally, there is the systematic opposition of general surgeons, who saw, with displeasure, otology detach itself from surgery, imitating ophthalmology at a distance of a few years. Finally, the most important cause is the fear inspired in human nature by all that is new.

Thus, by the force of inertia, and to continue tradition, our faculties of medicine, with certain exceptions ignore modern otology. The aurists have been carefully removed from university courses, and the otologic clinics which exist for the most part, lack assistants, clinic material, sites and laboratories, as opposed to certain other specialties that are far less important to the young physician than otology.

The inconveniences resulting from actual insufficiency of university instruction in otology are of different kinds. In the first place, the patients resent the lack, in their physicians, of knowledge of otitic prophylaxis, diagnosis and therapy. To know the means only of prophylaxis and treatment, which are very simple and within reach of every physician, is usually sufficient to check progressive deafness and severe aural suppurations, often dangerous for the life of the patient. Without exaggeration, we may state that it is possible to see daily the disastrous results of this ignorance, as shown in cases of deaf-mutism, incurable deafness and even death, which should have been prevented. With these facts in mind, the aurist feels a legitimate sense of pity and scorn, while the public and the physicians themselves, through respect for tradition, suffer them as a fatal, unavoidable evil. We ask how long will the authoritative voices be silent, which are able to show how these misfortunes are due not to fate but to negligence. How long will the authors of these disasters, assured of immunity, continue to cause such misfortunes?

The doctor, ignorant of otology, in the presence of a patient consulting him for an aural affection, has the choice between modestly admitting to him his incompetence and sending him to a specialist, or of undertaking some treatment, whose indications and results he cannot appreciate. How long will the doctor be honest enough to choose the first alternative and voluntarily renounce the profits of curing a new patient, es-

pecially now when the medical profession is actually undergoing an economic crisis?

The elective study of otology in the universities, and consequently the secondary rank occupied by otologic clinics, as opposed to those of obligatory specialties has plainly affected the dignity of otology. The secondary position of official instruction has evidently its excuse in the multiplication of pseudo-specialists, who favored by the absence of regular control, practice among the public on the strength of their claims and by frauds, which are renumerative but if not dangerous are at least useless. No one is ignorant of the wrong done to the patient and to the dignity of our studies by these unscrupulous fellows.

One of the most weighty objections raised against the institution of compulsory otologic examinations, even by those university professors who recognize in all sincerity the importance of that study, is the number of studies that the student of medicine must take during the last two years of his course. "How is it possible," they say, "to add another to the list?" The objection has some value, but does not justify the ostracism of such an important branch as otology; furthermore, it is evident that the regulations in regard to the curriculum of medicine should be changed from the way they have been for thirty years.

As with otology, so laryngology and pediatrics have acquired the right to be named in the curriculum in the future, these different specialties will be represented, not as they are at present, according to the more or less recent epoch of their autonomy, but according to the importance acquired in our days by their votaries. Of course the student, who is to receive general ideas, must not undertake the complicated methods of examining and operating on the ear, but only those parts of the specialty which it is necessary to know in his practice. Likewise in other specialties, they actually teach the student too much; for example in ophthalmology, how many practitioners ever make a cataract or plastic palpebral operation? Will a physician have more occasion to treat an insane patient than one with an acute otitis?

In asking that the example be followed of other lands that make instruction in otology compulsory in the universities, we mean only instruction in what the students will require in their practice. This will be easy to give in a single semester.

Resolutions have already been passed at many of our re-

unions, but we must not be discouraged because they have not succeeded. Each year will add to the value of our arguments, and will diminish the number of sceptics and opponents. Already, otologic instructions has been declared compulsory in Norway and Spain, and similar progress has been made elsewhere. There is hope that the logic of events will finally make an impression on human inertia, but all should co-operate to aid in this progressive movement, and I move the appointment of an international commission, for the purpose of studying and putting into execution the most opportune means of obtaining compulsory otologic intruction in the universities.

XLII.

OSTEOPLASTIC OPERATIONS ON THE FRONTAL SINUSES FOR CHRONIC SUPPURATION.

By Dr. Rich. Hoffman,

HEAD PHYSICIAN AT THE CHILDREN POLICLINIC AND THE HOME FOR INFANTS AT DRESDEN.

Whenever the question of operating on the facial portion of the skull comes up, we must be careful not only to thoroughly remove the focus of disease, but also to cause no deformity, or at least as little as possible.

These facts are naturally of importance in operations which are undertaken to cure a stubborn suppuration of the frontal sinus which can be cured in no other way and which is annoying or dangerous to the patient. The chronic suppuration of this cavity is the only one to be taken into consideration and whenever an operation is necessary, a small opening—½-1 cm. long—in the anterior wall of the sinus is sufficient for cure, and this never causes deformity.

The first and chief indication, the removal of the diseased focus, is found in those frontal sinus with diseased mucous membranes.

Since very frequently the affection of the mucous membrane is complicated by a similar affection of the ethmoid labyrinth, especially the anterior, a rational therapy must take this fact also into consideration or the result will not be favorable.

The frontal sinus has often a very complicated structure. It may be divided by septa into numerous inter-communicating cells. The extension of these posteriorly over the roof of the orbit is important. The so-called "orbital recess," caused thereby, may extend as far as the small pterygoid process of the sphenoid. Similarly, the frontal sinus may extend a considerable distance upward into the frontal bone, and also a considerable distance toward the temporal. The ethmoid cells sometimes protrude into the frontal sinus.

In order to remove the pathologic mucous membrane thoroughly from every cell and recess, which is necessary to affect a cure, it is necessary to obtain a good view of the frontal sinus. Many patients are so alarmed at the idea of having suppuration, that they desire to be relieved of it at any cost.

The second indication is osteoplasty, that is, to remove the anterior wall of the frontal sinus temporarily, and then replace it, while the other methods in which one or more of the sinus walls are completely removed, always leave more or less of a deformity. In regard to the osteoplastic method, I will go more into detail.

In this method, we distinguish between temporary resection of the anterior wall of the frontal sinus, and the formation out of it of a skin-periosteo-bone flap.

According to the literature, the temporary resection of the anterior wall was done first by Brieger (Archiv. f. Ohrenheilkunde, V. XXXIX., p. 213), with good success. The author does not give the result of the case.

I find a description of a method of this kind by Kocher (Technique of Operations, 3d Edition, p. 65), and likewise one by Hajek (Pathology and Therapy of Inflamamtions of the Nasal Accessory Sinuses, 2d Edition, p. 189).

The method of Kocher is as follows: After shaving the hair, a semicircular incision is made through the eyebrows down to the bone, as far as the median line. The frontal sinus is opened by means of a chisel. Through this small opening, the extent of the cavity upwards and laterally is made out. Then from this point, the bone is cut through by a straight chisel, first laterally and then upwards. The triangle of bone, thus formed, together with the periosteum, is broken off by an elevator and turned back. After everything diseased is removed, the operation is completed by drainage towards the nose, iodorform gauze tampon and temporary suture, and two days later, a secondary, permanent suture.

According to Kocher, it is seldom necessary to add a vertical cut to the horizontal one. Hajek, on the contrary, always adds it, making it correspond to the currugator fold. The height of the incision is determined by the Roentgen picture of the sinus, which is always taken before the operation. It is of special importance to make the incision a little internal to the median border of the sinus, since when the cutaneous wound lies on the border of the bony wound caused by the chisel-

ing, there arises later a linear depressed scar. After the cutaneous incision has been made, and the chiselled opening of the sinus at the most inferior part of the anterior sinus wall has been carried out, the bone is chiselled through horizontally and vertically, as nearly as possible exactly at the border of the sinus. The line in which the bone is chiselled corresponding to the perpendicular cutaneous section is never exactly perpendicular when it corresponds to the arc-shaped boundary of the frontal sinus, but is more or less convex upwards according to the size of the cavity and the position of the septum. The softer parts of the flap to be resected must be correspondingly undermined.

Similarly the softer parts must be undermined upwards from the external end of the horizontal * cut, and whenever possible the chiselling here must also be made at the margin of the sinus, so that at the end, the whole bony flap is joined to the frontal bone by only a small bony bridge, and can therefore easily be broken upwards and outwards by an elevator. After everything pathologic has been removed from the frontal sinus, that of the ductus naso-frontalis must be removed. Through this a sufficiently large drainage tube must be inserted into the nose so that after the resected bony flap has been replaced, the secretion has an uninterrupted flow from the operated sinus into the nose. Since the ductus naso-frontalis is rarely large enough for a suitable drainage tube, it must be artificially enlarged. For this, it is sufficient to scrape the walls of the duct with a sharp spoon, when the stenosis is caused by proliferation of muco-periosteal covering. This is usually, however, not the case, and therefore the duct is not made large enough by such a scraping to guarantee suitable drainage into the nose. Furthermore, the enlargement of the duct should serve to thoroughly remove the ethmoid cells that empty into the anterior part of the infundibulum. For these two reasons it is better to enlarge the exit artificially. Hajek does this in the following manner: First the spina nasalis superior, which projects towards the osteum frontale, is chiselled away in the direction of the sinus. Accompanying this, the anterior part of the middle turbinate is removed, that is, the internal bony wall of the ductus naso-frontalis. The portions of bone chiselled off are removed partially through the sinus and partially through the nasal cavity. When the ductus naso-frontalis

*Hajek makes the main horizontal incision from the inner end of the eyebrows to the external third of the same down to the bone.

has thus been enlarged, a part of the anterior ethmoidal labyrinth can be reached with the chisel without difficulty.

In the wide exit thus formed a rather thick drainage tube is inserted, which both Hajek and Golovine (see below) let remain in situ for 6 to 12 weeks. In order to fix the tube in position, a thread is carried from its upper end through the wound and fixed in the skin. After the drain is removed, the exit is for a few weeks touched with a 5 to 10% silver nitrate solution to favor the ingrowth of epithelium into the sinus. Hajek sutures at once and allows the first bandage to remain in position 8 to 10 days unless severe pains or great swelling of the soft parts necessitate an earlier change. In the second week a slight dressing is used; in place of the suture by which the thread from the upper end of the drain is fixed, a piece of court plaster is used.

The formation of a skin-periosteum bone flap from the anterior wall of the frontal sinus seems to have been carried out first by Schönborn (Wittkop, Dissertation, Würzburg, 1894, page 36). The incision was of such a kind that the sinus was opened by a skin-bone flap. The details of this are not given. By means of the chisel and elevator a piece of bone about two cm. in diameter is lifted up and is left hanging to the flap, and thus the right and left frontal sinuses were opened. Evacuation of both sinuses, probing of the right ductus naso-frontalis, tamponing of the cavity with iodoform gauze. This was removed the third day after the operation and the skin-bone flap was fixed by silk sutures. First intention. Discharged ten days later. Additional particulars not given.

Czerney operated in a similar case (Transaction of the German Surgical Society, 1895, Vol. II, page 213). An arc-shaped incision over the glabella, convex downward, formed a skin-periosteum flap, whose base lay in the middle of the forehead. After the incision had been made to the bone, the latter was cut through with the chisel at the level of the right frontal sinus, and the anterior wall of the cavity, together with the skin-periostum flap, was turned upwards. After evacuation of the sinus, the duct was widened. Drain wound kept open for a time with a tampon. Healing of bone flap in four weeks. About one and a half years later patient reported he had been well since the operation, had felt no pain in the frontal sinus, and was able to work all of the time.

About that same time Dr. Volkowitch exhibited a patient, operated on in a similar manner, before the Sixth Congress of

Russian Physicians, at Kiew, April 25, 1896, (cited by Golovine, Transaction of the Moscow Congress, Vol. VI, page 219).

Golovine described another case before the Moscow Congress, 1897 (Transaction, Vol. VI, page 221).

Four cm. incision along the inner half of the eyebrows on the upper border. At its internal end, a second oblique incision in the corrugator fold. The two incisions formed a T and reached to the periosteum. The soft tissue forming the upper border of the wound was dissected off and turned backwards, and a curved incision was made in the periosteum, whose lower border, two cm. in height, was formed by the inner third of the orbital ridge. The dimensions of the curved periosteal incision depends on the size of the opening which it is desired to make. Corresponding to the curved periosteal incision, the bone is chiseled through as far as the diploe, and bone is then broken through by a small, flat and very broad chisel, held obliquely, without the danger of entering the cranial cavity. The piece of bone obtained thus from the anterior wall of the sinus can then be turned back and a clear view of the cavity is obtained, so that it can be curetted. A drain is placed in the nose, which remains two months and often longer. Primary suturing.

Golovine was able to report a case as cured after nine months. In regard to the cosmetic effect he says: "As far as the looks are concerned, we have obtained perfect results; no deformity, scars hardly visible."

My own operations on the frontal sinus comprise forty-six cases, of which thirty-eight were chronic and eight acute. Eleven of the chronic and one of the acute were bilateral suppurations.

In the eight cases a simple opening with drainage outwards and subsequent cleansing of the cavity was sufficient for healing. Twice drainage through the nose also was employed.

Of the thirty-eight chronic cases, twenty-six were operated according to Kuhnt; in four cases (one bilateral) the anterior wall was temporarily laid back, after Kocher's method; in eight cases (two bilateral) there was an osteoplastic operation.

Of the thirty-eight chronic cases, in twenty the ethmoid was also diseased, and of these in seventeen cases (four bilateral) only the anterior cells were involved, while in three cases (one bilateral) the middle and posterior cells were also affected. In the last cases in order to get at the diseased ethmoid cells, the nose was once paramedianally incised and once laterally.

In the third bilateral cases, the ethmoid was attacked from the orbit. In one case of bilateral disease, where a good view could be obtained of the duct and the diseased anterior ethmoid cells, the processus frontalis of the upper jaw and a part of the inferior wall of the frontal sinus was resected on both sides, after Killian (Archiv. f., Laryngologie, Vol. VIII, No. 1).

In fourteen of the above twenty cases, the maxillary antrum was diseased at the same time as the ethmoid (four times bilaterally).

Twelve cases were only frontal and maxillary sinus suppuration (three times bilaterally). In six cases (twice bilaterally, of which one was a bilateral traumatic suppuration) the frontal sinus alone was involved. Three acute cases were complicated by a maxillary sinus suppuration.

In regard to the results, the acute cases, as indicated above, were all cured, and the cure has lasted several years.

Of the 26 cases operated after Kuhnt's method, 16 are to be regarded as cured, and the cure has lasted several years.

In three cases (one bilateral) the cure lasted one year; a longer control was not possible. One bilateral suppuration, after the treatment, went to another doctor. Two bilateral cases died, one from a brain abscess, the other from some intercurrent disease.

In regard to the osteoplastic operations, two cases of temporary reflection (according to Kocher's method) were cured, one for four years, the other for more than two years. The treatment of one case operated in this way is not yet concluded.

Three cases of osteoplastic treatment have remained cured for a year or nearly a year; one died of meningitis. Four (two bilateral) are still under treatment.

In regard to the complicating suppurations, four of the cases operated according to Kuhnt still discharge from the maxillary sinus (boring into the alveolar process, no radical operation) and in three cases from the ethmoid.

The comparison of the cosmetic results of the cases operated according to Kuhnt's method with those of osteoplastic opening of the frontal sinus shows that the latter is by far the best. This can be easily seen from the photographs.

As can be easily demonstrated by performing the osteoplastic operation, the operator thereby obtains a fine view of the sinus and thus can thoroughly remove all diseased tissue. If Hajek's method of enlarging the exit by removal of the spina nasalis superior is adopted, there is an easy path to the ethmoid. If

this does not give a sufficient view of the exit and ethmoid, the processus frontalis of the superior maxilla can be resected, according to Killian, as I did in one case. If the ethmoid is extensively involved, the usual treatment for this can be added to the osteoplastic operation.

The careful removal of all foci of disease not only causes a complete cure, but prevents a return.

The sinus cavity after the osteoplastic operation has a different state from that after those with a resection of its walls. In the former the cavity is on the whole well retained, while in the latter it is more or less obliterated.

Therefore, as Hajek also said, it is necessary to have a wide drainage way towards the nose, which is obtained by enlarging the exit, and also to allow the drain to remain as long as possible, as Golovine also recommends.

In this way not only does the connection between the sinus and the nose remain a wide one during the process of healing, but it is to be expected that it remains permanently wide. Thus a retention of secretion, which might occur following a reinfection from the nose with a swelling of the mucous membrane, is prevented. Great emphasis should be laid on this enlargement of the ductus naso-frontalis in order to obtain a permanent union of the operated cavity with the nose, as well as on the thorough evacuation of the frontal sinus and the ethmoid when it is also diseased.

In regard to the permanent cure after an osteoplastic operation, I should like to report two cases as cured (v. s.)—strictly speaking, only one has remained cured for four years under continual observation—while the others have been under observation too short a time to allow a judgment to be expressed. Hajek saw four of his cases cured. Golovine saw his cases cured after nine months—too short a time.

As to the permanency of the cure after the osteoplastic operation, we take the same standpoint as Hajek, namely, that a definite judgment will take years.

The number of patients permanently cured is therefore scant.

It is to be expected, however, that if a wide and permanent union with nose has been carefully constructed the result will be good. At any rate, the wonderful results encourage us to try for perfection of technique in order to reach the goal of the best operation.

In the treatment of chronic suppuration of the frontal sinus, my operations developed the following rules.

The treatment of the sinus must first be preceded by a careful diagnosis of whether there is a complicating suppuration of some other accessory sinus. A maxillary antrum affection must be treated first. The ethmoid requires special consideration. The diseased cells, so far as they are accessible from the nose, must be opened and the diseased mucous membrane removed after resection of the corresponding part of the middle turbinate and even the processus uncinatus. Resection of the middle turbinate creates a means of effectively probing and subsequent lavage of the frontal sinus.

The removal of pus by lavage of the frontal sinus is the most positive sign of its disease. In all but five of my cases the diagnosis was made by probing and subsequent lavage. In two of these five, I was unable to get into the sinus and in three the probing gave no results (manifest empyema).

In some of my later cases I have followed the advice of Scheier (Transactions of the Laryngologic Society of Berlin, Vol. VIII, page 35) and others, in having a radiogram of the frontal sinus, taken in order to ascertain its size, and also whether or not it was present. Incidentally, I desire to say that I regard the transillumination of the frontal sinus to be of secondary importance, since I have convinced myself, when I was assistant in Prof. Kesselflar's clinic at Jena, that a frontal sinus with a severe purulent affection may be clear to transillumination. Later observations have only confirmed this judgment of its value.

The methods used by me in the osteoplastic operation on the frontal sinus are as follows: First a horizontal incision from the dome of the eyebrows to the outer two-thirds or end of the eyebrows. The incision does not lie in, but rather immediately under the eyebrows, because I have observed that otherwise the cosmetic results were bad on account of irregular position of the brow, in the formation of a scar. Most authors make the incision through the middle of the eyebrow. Golovine makes it along the upper border. Next comes the incision through the soft parts, then through the periosteum 0.5 cm. from the orbital border. Retraction of the latter as little as possible, and only downwards (The retraction of the periosteum only downward and mesially is to leave the bony flap with as much of a periosteal cover as possible.) Exploratory chiseling of the sinus. From this small opening the extent

of the sinus laterally and superiorly is made out by means of the bent probe, as is also the thickness of the wall.

If the wall is thin, I resect it temporaly. For this a second incision in the corrugator fold is necessary, with a mesial reflection of the periosteum. In making the vertical incision it is well to have in mind the advice of Hajek, given above. I carry out the rest of the operation as Kocher advises. If any difficulty is furnished by the reflection of the bone, its base can be made smaller by chiseling the bone corresponding to the superior and temporal border of the sinus (Hajek). The diseased mucous membrane must be carefully removed—this is of the greatest importance—and any partitions in the sinus cavity must be resected. The orbital recess requires special care. The ethmoidal cells that project into the frontal sinus can be easily opened, and under certain circumstances furnish an entrance to the other diseased cells. Finally comes the sterilization of the exit and its enlargement. In doing this diseased ethmoid cells are often encountered, which can easily be evacuated. Lastly, I have enlarged the duct according to Hajek's method. We mentioned above the treatment of the ethmoid cells which could not be reached from the frontal cavity. After the wound has been thoroughly cleansed, a drain is placed in the exit. I use spiral drains of silver wire and a thread or wire is run through its upper end, which is secured externally by a suture. The wound is either sewed at once or two days later. Agreeing with Golovine and Hajek, I leave the drain in position twelve weeks in order to provide an extensive communication between frontal sinus and the nose, not only during the period of healing, but as a permanency. After the drain has been removed the duct is brushed with a 5% silver nitrate solution (Hajek).

If the anterior wall of the frontal sinus is very thick—we found it in one case 0.75 cm.—I make, according to my own method, a skin-periosteal-bone flap out of the anterior wall, by introducing into the horizontal periosteal section a wedge-shaped chisel of a breadth corresponding to the extent of the frontal sinus temporarily. This contains the anterior wall, in its entire thickness only so far as the cavity is opened by the flap, and is distinguished from other methods by the manner of its construction and its composition. The flap is thrown upwards. If it is too small a second can be made near it.

This method of opening the frontal sinus could be called "Osteoplastic Chiselling."

For cosmetic results, and also for the cure (formation of chambers in the cavity by sinking in of the osteoplastic flap, which has been deprived of its bony support) it is necessary that the temporarily resected anterior wall as well as the osteoplastic flap formed from the anterior wall, must fit exactly in the defect or be supported by the surrounding bone.

I have avoided the vertical skin incision in those cases where I formed a skin—periosteal-bone flap out of the anterior wall, in cases of small sinuses, but I have made a subcutaneous incision in the periosteum.

If the case is one of a deep orbital recess, the wound can be left open until the deepest recess has been filled out with healthy granulation, and the skin-periosteal-bone can be replaced later.

If a cure has not been accomplished in this way, the Killian method must be considered, since in addition to the possibility of removing all diseased tissue, it furnishes the best cosmetic results, next to the osteoplastic method.

These operations as well as Kuhnt's (Kuhnt, "The Inflammatory Diseases of the Frontal Sinus," Wiesbaden, 1895) are also to be taken into consideration when the anterior and inferior bony walls are diseased.

On the other hand, an intracranial complication necessitates a complete avoidance of osteoplastic operation.

In bilateral diseases, I made the incision simultaneously on right and left side. According to observations made elsewhere, both horizontal and vertical incisions in the median line give more or less deformity, while those in the lateral wall of the nose and the corrugator ridge are cosmetically favorable.

My conclusions are as follows:

Wherever there is no disease of the bony walls of the frontal sinus, the osteoplastic method of treating chronic frontal sinusitis is to be preferred, since it satisfies all the indications, that is, a sufficient survey of the sinus is thereby obtained, and the treatment of the ethmoid can also be carried out, and therefore all diseased tissue can be thoroughly removed while, at the same time the cosmetic results are good.

In using it, the following must be observed:

(1) That the replaced bony flap must everywhere rest on the surrounding bone, in order to get good cosmetic results

and prevent the formation of recesses that delay healing.

(2) That the connection of the unobliterated cavity with the nose must remain a wide one as this is the surest guarantee against retention of secretions during healing and against reinfection.

A definite judgment as to the value of and the permanency of the cure following osteoplastic operations can be rendered only after years have passed.

XLIII.

OBLITERATION OF THE PHARYNGEAL ORIFICE OF THE EUSTACHIAN TUBE, COEXISTANT WITH ANNULAR STENOSIS OF THE EPIPHARYNGEAL ISTHMUS.*

By Dr. J. Molinie,

Marseilles.

The vestibule of the Eustachian tube, on account of its position, is but slightly exposed to pathologic manifestations, and abnormalities are exceptional. It may nevertheless be subjected to injuries which may cause deformity or obliteration. Traumatisms (unskillful introduction of instruments for therapeutic purposes) and surgical operation may wound the tubes and causes cicatrices of the borders. Several instances[1] have been cited of traumatism by firearms producing wounds of the pharyngeal orifice of the tube. The results of these accidents have been generally atresia of the tube, supervening upon cicatrization of the wound.

There are still other causes of obliteration of the tube. Gruber[2] mentions cysts of the pharyngeal orifice. Boeninghaus[3] observed it following tumefaction of the tube.

We must mention, most of all, specific ulcerations of the epipharynx which in cicatrizing, leave adhesions or fibrous bands which close the pharyngeal opening of the tube. These pathologic manifestations are not so very uncommon and constitute isolate facts.

Rarer still is the method of obliteration which I have observed, characterized by the presence of a sort of fibro-membranous curtain covering the whole of the lateral part of the epipharynx and replacing all the anatomic peculiarities of this region. The fibro-membranous investment attached be-

*Read before the International Congress of Otology, Bordeaux, August, 1904.

[1]Schwartze—Maladies d'oreille. Vol. II. P 119.

[2]Gruber, Kyste de l'orifice pharyngeal de la trompe. Societe Autrich, 1897.

[3]Monat für Ohrenheilk, 1897. p. 112.

hind to the epipharynx and covering the lateral wall of the epipharynx was inserted anteriorly to the superior surface of the palate. This abnormal union contributed to form a stenosis of the epipharyngeal isthmus. There has been, to my knowledge, no case in which there was a similar condition of things and as I have occasion to see two cases, I deem it proper to report them.

Case 1. Miss D. aet. 27, called upon me on May 17, 1899. Antecedent heredity good. Mother living, father carried away by a surgical affection. From a personal standpoint, there does not appear to be a grave affection present. In infancy she was quite delicate. The patient who was a frequent sufferer from throat disease, was treated with repeated galvanocautery applications. At the age of three she had a severe attack of pneumonia which almost terminated fatally. At the same time she had an acute suppurative otits media on the right side leaving slight deafness which has increased from time to time. Hearing of the left ear was progressively becoming feeble without reason and at the examination it was very poor.

During the year 1897, nasal respiration was slightly embarrassed and as it continued to progress it has tended to cause almost complete suppression of the permeability of the nose. The patient has been operated on for fistula in ano. She suffers with articular pain whenever there is a change of temperature.

Watch test, right 0.04 meter, left 0. Examination showed the tympanic membranes, greyish dull in color, much retracted with the handle of the hammer very oblique, with the short process projecting out.

Nose. During inspiration, the air enters the pharynx but during expiration it can not pass through the nose. From the impossibility of blowing the nose, there is an accumulation of the secretions in the nose. The nasal mucosa is in a normal condition. The secretions are very abundant; taste and olfaction diminished.

Mouth, nothing abnormal; dentition good; no abnormalities of the teeth.

Pharynx, anterior pillar normal; tonsil small and free anteriorly, but posteriorly it is covered by a very adherent fibrous membrane which covers it as a cowl and which fixes it without loss of continuity to the lateral wall of the pharynx. There is no trace of a posterior pillar. The palate has retained its

normal form, but is lower than in the normal state. Furthermore, it is absolutely fixed at this place and all movements of ascent or descent are prevented. It is not adherent to the pharynx; a probe may be inserted between it and the pharynx. On each side the palate terminates in a falciform fold which joins the pharynx almost at its origin. The extent of the free border of the palate is reduced to very small proportions. Pharyngeal mucosa is dry, covered with thin viscid secretions. Posterior rhinoscopy is difficult, the space does not permit of sufficient light for the examination of the posterior face of the palate. The very pronounced stenosis of the isthmus of the epipharynx does not permit the passage of the index finger.

A Moritz Schmidt refractor was insinuated into the epipharynx, making a passage about five millimeters wide, by virtue of which I made an exploration of the cavity. I saw that the palate was attached on each side at its superior surface to a fibro-membranous band which on the postero-superior region of the epipharynx forms an investment of the lateral part of this cavity and spreads like a fan, sending most of its fibres to the superior border of the palate, while the others are joined with the pharyngeal mucosa. This membrane had a fibro-mucous aspect, red in color and of a certain elasticity. It masked completely the orifice of the tube and the fossa of Rosenmüller. Palpation showed a surface smooth and even upon which it is impossible to recognize anything in relief or projecting, such as exists normally on the lateral walls of the epipharynx. The supratonsillar fold shows a small orifice, in which I introduced a probe, which projected under the epipharyngeal mucosa. The voice is nasal and gives place to the affection known under the name as *rhinolalie fermee.* We have here an annular stenosis of the isthmus of the pharynx, causing obliteration of the tube.

Treatment—Two results were sought for: 1. Dilation of the stenosis, and, 2. reestablishment of the permeability of the tube. The first of these desiderata was easy to obtain. I modified Hegar's bougies, giving them the form of an epipharyngeal applicator. I introduced a bougie, No. 16, which I left in place for one minute. Little by little I introduced larger calibres, which were retained longer and longer. I reached a calibre of 23 mm.

The disappearance of the nasal occlusion and the troubles produced by it was the first result obtained. Nasal respiration

became possible, the secretion could be expelled by blowing the nose, the voice acquired more resonance.

But in the matter of hearing, while the patient had a slight augmentation of auditive acuity, the improvement was only transient.

In order to obtain the best results I tried to reopen the pharyngeal orifice of the tube. Through the superior portion of the tonsil I introduced a probe which I made project under the margin of the pharyngeal fold and come out again in the epipharynx. But the opening which I made closed again after a short time, and the attempt was vain. I tried electrolysis, but the electrolyzed site at the scar was closed again, and I did not discover anything which could clear out the vestibule or orifice of the tube. I asked my patient to consult Dr. Lubet-Barbon, who advised against the attempt. According to him all efforts to reopen the tube would be fruitless. He advised perforation of the tympanic membrane as an unique remedy for the deafness. After much discusston she decided to submit to this treatment, which I undertook in September, 1901. Perforation of the tympanic membrane was made by means of a crystal chromic acid. Instantaneously the hearing improved in an astounding fashion.

Take note that during three years the perforation has not closed. A slight serous discharge passes through this opening. The patient uses lavages when it is too abundant. Hearing continues good.

Case II. M. W. aet, 44, presented himself to me on March 12, 1904, accompanied by my colleague, Dr. Bourdillon. He complained of deafness. Previous history was not marked by any special event. He is in good health and is the father of several well-nourished children. He stated that at the age of 18 years he had a diminution of the hearing of the right ear, causing complete deafness at the present time. On the left side some difficulty of hearing appeared about ten years ago. Since that time the state of the patient passed through various stages of aggravation and improvement. Galvanocautery applications to the throat have been applied as a remedy for his deafness. Each application he said improved his hearing! So he asked for them to such an extent that he had had not less than a hundred applications. In Port Said and in Australia physicians use large cauterizations which in the patient's instance were applied with little danger.

Examination.—Ears—From a functional standpoint there

was a very marked bilateral deafness with tinnitus. The lesion could be located easily in the middle ear. The objective examination showed a very decided retraction of the drum and a very pronounced inclination of the handle of the hammer.

Nose—Hypertrophy of the turbinals.

Pharynx—The pharynx is red and covered with varicosed vessels. The palate has a normal appearance, but approximates closely the pharyngeal wall; mobility restricted; posterior rhinoscopy, though difficult, is possible. The isthmus of the epipharynx has the form of a transverse cleft limited anteriorly by the posterior border of the palate, posteriorly by the pharyngeal wall. Each of the sides of the falciform folds is very lax uniting the lateral borders of the palate with the laryngeal surface. These folds cover the openings of the tubes. When the palate was drawn aside by the Moritz Schmidt retractor this membrane appeared to cover both sides of the pharynx, so as to blend with the superior border of the palate and to mask completely the opening of the tube. It appeared to be an annular stenosis, with obliteration of the tube.

Treatment.—To facilitate respiration I introduced respirators to overcome the constriction and the contraction of the ring. But in view of the lesson of the preceding case, I made no effort to reopen the orifice of the tube. Hearing, although diminished, permitted conversation. Intervention as to the tympanic membrane did not appear to me justifiable.

Pathology.—If by reason of these two cases it is desired to study the characteristics of the disease, we must inquire into the clinical picture.

Symptomatology.—The principal lesion is a new formation of a fibro-mucous membrane attached to the lateral walls of the pharynx covering the tubal orifices and vestibules and the fossae of Rosenmüller and in general all the projections and depressions which are normally found upon the walls. This membrane blends above and behind with the pharynx and below and in front with the superior surface of the palate. The adhesion has the effect of exercising a certain traction upon the palate which is attached to the pharyngeal wall and forms a stenosis of the epipharyngeal isthmus. This stenosis has the appearance of a fibro-membranous ring with a smooth surface, which may present a greater or less degree of stricture, The existence of this membrane constitutes the entire lesion.

It shows the following: When the palate is in a state of repose, the epipharyngeal isthmus is found much narrowed.

It is limited laterally by this bilateral membrane. The palate is fixed on the sides, but is free in the median portion. The uvula is attached to the pharynx and lies higher than in the normal state.

The posterior pillars may disappear; the free border of the palate may be united laterally with the pharynx. The uvula is not altered in its form and the examination of the mesopharynx may hardly indicate the existence of this anomaly, which might be misunderstood if the mucosa appears red and not cicatrized.

The adhesion of the palate and pharynx is lateral; it does not exist at the center and the uvula remains free, though limited in its movements. All these pathologic modifications cause a certain number of functional troubles which depend upon, (1.) respiration, (2.) olfaction, (3.) audition, (4.) phonation.

1. *Respiration.*—The symptoms resulting from the interference with nasal respiration are very extensive. Inspiration and expiration are both possible, but they are difficult in proportion to the closeness of the epipharyngeal stenosis. Inspiration is freer than expiration. The current of inspired air is remote from the palate, while the expired air is applied more intimately against the pharyngeal walls. The palate therefore acts as a valve, opening at inspiration and closing at expiration. A consequence of this peculiarity is the impossibility of blowing the nose, by which there is a stagnation of the nasal secretions, which accumulate in the nasal cavities and prevent the expulsion of the current of expired air.

The usual symptoms of nasal obstruction are found in these patients.

2. Olfaction is altered when the current of expired air is suppressed.

3. Audition.—Deafness and tinnitus are subjective phenomena of the obstruction of the tube when of such a high degree. In point of objective signs, we observe an obliquity of the handle of the hammer and retraction of the drum. In one case the membrana seemed attached to the promontory.

4. Phonation is altered by defect in the resonance of the nasal cavities, giving us the condition known as *rhinolalie fermee.*

Etiology.—The condition has been found in a man 45 years of age and in a woman of 23. In neither instance was there any disease except of a nature not absolutely fixed, but which was to be considered as a common lesion. In the two cases

the galvanocautery was the principal means of treatment for the throat trouble. There were no evidences of acquired or hereditary syphilis.

Pathogenesis.—Most of the adhesions are due to the resolution of ulcers by new formation of fibrous tissue following an ulceration process. Was it the same in these cases? There is nothing to prove it. The infection came on insidiously. without pain or noticeable symptoms. It progressed insidiously and at no time was it recognized as a sequel of the ulcerations which no one had seen. There were no indications which would lead us to recognize the causes which brought about the substitution of the pathologic form for the normal. The absence of anatomico-pathologic knowledge upon the subject makes the explanation more hypothetical.

The affection cannot be considered congenital, since the subjective troubles of olfaction and respiration occurred in adult life. Perhaps there was an anatomic disposition which favored the production of this state. The action of the galvano-cautery is not demonstrated, but I have held it as a cause from the fact that there was an immoderate application in both cases.

So far as syphilis being a cause is concerned, there is nothing which shows its presence. The manner of annular stenosis differs altogether from the cicatrical bands consecutive to syphilis, as is shown in the parallel columns:

Annular Stenosis.	Syphilitic Stenosis.
Normal aspect of the pharynx, preservation of the form of the uvula.	Deformity of the pharynx, modification of the length and form of uvula.
No loss of substance; no cicatrices.	Loss of substance; cicatricial tissue.
Color of the mucosa normal; elasticity of the tissues; diffusion of the lesions.	Fibrous sclerosis of the connective tissue; color, yellowish-white; very rigid and extending without order.
Lesions cover the tube.	Persistence of the orifice and vestibule.
Regular, bilateral and symmetrical.	Localization capricious and irregular.
Free border of the palate free.	Adhesion of the free border of the palate, generally attached to the pharynx.
Stenosis annular with centripetal tendency.	Symphysis often going from the center to the periphery.
Course slow.	Rapid establishment of lesions.

If syphilis is claimed as a cause, we must consider as present

a diffuse syphiloma or gumma, ulcerating and then cicatrizing.

Treatment.—The re-establishment of the orifice of the tube is impossible. Every opening made will disappear. We can then only seek to reconstitute the normal condition by dilating the stenosis. The best treatment, in my opinion, is with Heger's bougies. The necessary form for introduction into the epipharyngeal cavity can be given to them. They act as regular screws which permit the progressive degree of dilation desired. They act in every direction and dilate the stenosis on all sides.

After a short time the patient can introduce it himself, even if he cannot remain under the care of a physician. In this efficient and durable manner, the functional troubles of respiration and their consequences are relieved.

The free permeability of the nose is obtained, permitting expulsion of the nasal secretions. The *rhinolalie fermee* is overcome and olfaction re-established. For audition, paracentesis of the tympanic membrane is the sole means of improvement. Ought it to be employd immdiatly? It is preferable to wait until deafness has reached a marked degree.

In the first case it was very efficacious, and what is more remarkable, the relief was permanent.

XLIV.

CONTRIBUTION TO THE STUDY OF THE BOUGIRAGE OF THE EUSTACHIAN TUBE; MODIFICATION OF THE CATHETER ALLOWING SIMULTANEOUSLY THE COMPRESSED AIR DOUCHE AND THE PAINLESS INTRODUCTION OF THE BOUGIE.

DR. C. J. KOENIG, OF PARIS.

The bougirage of the Eustachian tube has become an important factor in otological technique. Numerous are the cases of deafness and of tinnitus caused by swelling of the walls of the tube or by fibrous stricture more or less thick and wide. Such cases are generally cured or are much improved by progressive dilatation by means of graduated bougies, for the catheterism alone or the air-douche according to the Politzer method does not always suffice to obtain regression of a mucous membrane in which infiltration has progressed to fibrous organization. The bougirage is in those cases a means of diagnosis as well as of treatment, but if care be not taken it may lead to errors. We must not forget that occasionally the introduction is hindered by a congenital bend of the canal or by folds of the mucous membrane; the tip of the bougie strikes against the obstacle and the bougirage is rendered very difficult, if not impossible. One may then think he has to deal with a stricture, when such is not the case.

The bougirage of the Eustachian tube is subject to other inconveniences; in the first place it is painful. I have observed that the rubbing of the bougie against the mucous membrane is the cause of the pain, rather than the pressure; for, when the bougie has passed the isthmus and is at rest, the pain produced by its introduction ceases rapidly, to return only when the bougie is drawn out or pushed forward and backward. The pain is felt either in the ear, the teeth or in the occipital region, and all patients complain considerably about it, though it disappears rapidly when the bougie is at rest or has been withdrawn. Furthermore, it often happens that the rubbing

irritates the membrane, causes it to swell and thus diminishes still more the permeability of the tube, increasing the deafness and the buzzing; the middle ear may even become the seat of an inflammatory reaction.

Tearing of the mucous membrane and the resulting emphysema is another one of the drawbacks of the bougirage, but this slight accident, which has no serious sequels, will hardly happen when care is taken not to introduce the bougie too rapidly and too violently.

In order to obviate, as much as possible, all those inconveniences, I modified the catheter so that, by means of the compressed air, I could, during the passage of the latter, introduce the bougie at the same time. The air dilates the tube, flattens out the folds of the mucous membrane and the bougie passes with the minimum of rubbing and consequently with the minimum of pain.

The modification of the catheter consists in the replacing of the ring by a small canal which opens into the lumen of the catheter. This canal is for the passage of the bougie and as its orientation is the same as that of the ring, it indicates the direction of the tip of the catheter. The diameter is slightly superior to that of the largest celluloid bougie, i. e., a little more than a millimeter and a quarter. It is naturally necessary that the diameter of the lumen of the catheter itself should be superior to that of the bougie in order to allow the air to pass around the latter. The small amount of air which finds its way back through the small lateral canal is insignificant and does not diminish the pressure sufficiently to prevent the penetration of air into the tube and the middle ear. The Popp Company in Paris furnishes compressed air under a pressure of 5 kilogrammes per square centimeter and the pressure can be regulated at will by means of a cut-off. While the patient or an assistant works the cut-off the operator has his two hands free, the left one to hold the catheter firmly in place and the right one to introduce the bougie. The introduction is accomplished easily and without pain in the majority of cases and is greatly facilitated when prouounced fibrous stricture is present. The catheters are made *right* and *left* so that the bougies may always be introduced with the right hand.

XLV.

LUCAE'S SPRING-SOUND, PARAFFINED.

By Dr. C. J. Koenig, Paris.

I desire to recall the advantages of Lucae's sound, *paraffined,* for the direct massage of ossicles of the ear. By dipping the small cup of the instrument into melted paraffine, a small soft pearl of the latter substance remains adherent to it. The processus brevis of the hammer, to which it is applied for the massage, sinks into the mass—rubbing against the drum and slipping off the processus brevis are thus avoided as well as the pain and lesions which are the consequences thereof.

The cases which, according to my experience, are most benefittd by this method are those of ankylosis of the ossicles resulting from thickening of the mucous membrane of the tympanic cavity in people of a certain age (50 to 60 years old) without heredity, suffering from spurs or deviation of the septum and consecutive hypertrophic rhinitis with congestion of the drum. When the nasal cavities have been put into good condition, a few sittings of catheterism and of pneumatic massage improve those cases markedly—the congestion of the drum diminishes considerably or completely disappears, the whispered voice is heard at a distance of a few meters instead of a half a meter. I have frequently observed that those cases can still further be improved by direct massage with Lucae's sound after the catheterism and the pneumatic massage have been pushed to their extreme limit and have accomplished all they could. Especially the hearing of sibilant sounds, which seem to be less penetrating, and are heard by many people with difficulty, is much improved. It is, of course, necessary to do away with the congestion of the drum before resorting to the paraffined sound, which must in all cases be prudently used. At first the pressure must be very weak, 60 grammes, for instance, and the massage movements few in number. Also the sittings should at first be separated by a week's interval until the drum and the ossicles have become used to the contact of the instrument; they can then take place more frequently, increasing gradually at the same time the force of the pressure and the number of massage movements.

XLVI.

MODIFICATION OF THE EUSTACHIAN CATHETER SO AS TO FACILITATE THE RETURN OF EFFUSIONS IN THE MIDDLE EAR.

By Dr. C. J. Koenig, Paris.

In sub-acute and chronic catarrh of the middle ear with serous or mucous effusion, the disappearance of the latter is generally accomplished by catheterism. The exudations are in part absorbed by the lymphatic vessels, but are also in part blown back into the Eustachian tube and the naso-pharynx by the return of the air. One can be convinced of this fact in those cases where the exudation is mucous by examining the tip of the catheter after its withdrawal or by inspecting the opening of the tube with the post-rhinoscopic mirror—they will be found covered with mucus. But as the tip of the catheter obstructs the Eustachian tube, the exudations find an obstacle to their return and are blown back into the middle ear; thus the cure is retarded. Only with difficulty does a small quantity of the exudate find its way around the tip into the nasal pharynx. This inconvenience can be obviated by means of a grooved catheter, the groove being made on its convex side and running to its very tip. This disposition facilitates the return current and the exudates are blown back into the naso-pharynx. The more serous the exudate, the more easily will its return be accomplished. The caliber of the catheter must be as big as possible; under No. 4 the groove cannot be made large enough to produce a useful effect.

XLVII.

A CASE OF PURULENT PIAL MENINGITIS FOLLOWING AN ATTACK OF ACUTE MIDDLE EAR DISEASE. DEATH. AUTOPSY.*

By. J. H. Claiborne, M. D.,

NEW YORK.

I was called on Tuesday morning, February 16th, to see A. Mc. C. on account of pain in his right ear. I was unable to go but ordered hot douches every half hour, which the patient, being unruly, did not permit. A physician, a friend of the patient, called at my office a short time afterward and said the drum-head had burst the night before, but the pain had not ceased. From this fact I assumed that there was mastoid infection. I arrived at his apartments between 5 and 6 and found him in bed partly dressed, in which condition he had retired the night before on account of the cold. He was a man of about 40-45, slender and sallow in complexion and very tall. When I arrived he was conscious but in great pain; he did not complain of his ear at all but kept complaining of pain over his forehead which he continually pressed with his left hand and frequently tugged at his forelock, tossing his head from side to side. I discovered a piece of cotton in his right ear which was soaked with pus tinged with blood and the canal was partly filled with pus which apparently was odorless.

After syringing the ear and cleansing it, I discovered a free opening downward and outward through which pus was oozing. There was a slight redness along the anterior wall of the canal, but I was not able to discover any sagging of the auditory canal in the vicinity of the drum-head.

The mastoid was hard and firm and the skin over it normal; ordinary pressure produced no sensation whatever, but very hard pressure over the region of the antrum caused a slight

*Read by title at the Thirty-seventh Annual Meeting of the American Otological Society, held at Atlantic City, N. J., July 11th and 12th, 1904.

wincing. I could not interpret this fact as indicative of mastoid involvement on account of the otherwise perfectly normal character of the region and the over-sensitive condition of the patient.

The left ear drum-head was normal. His wife stated that the patient had suffered for about a month with constant headache and some dizziness which he attributed to the need of a change in his glasses. He had a bad cold for a week or more and on Monday, the evening before I saw him, he came home complaining of his right ear and his head. During the evening the pain in the ear got worse, also the headache. He became profoundly depressed and told his wife that "this would finish him." He did not send for me or anyone else but she gave him ¼ grain of morphin at his suggestion. During the night the ear-drum burst and the ear symptoms were relieved, but the pain in the head became worse. He suffered the entire night, at times practically out of his head, and on through the day, the pain apparently increasing up to the time I first saw him on Monday, about 24 hours after the commencement. His pulse was exceedingly hard, bounding, strong and irregular, and the beat about 100 per minute. His temperature, taken in the mouth with lips imperfectly closed, was 100-2/5°F. He was cold, though covered with heavy coverings and partly dressed, and very nervous, apprehensive, irritable and restless. His pupils were rather small but reacted normally. I did not have an ophthalmoscope and hence was unable to examine his fundi.

I had known this gentleman for a number of years and knew that he had formerly been an associate in a sanitarium for insane and drug habitues. On one occasion, several years ago, after he had left the sanitarium and was a traveling agent for a medical firm, he called on me. I observed at the time that he was "flighty," extravagant and exaggerated in speech and manner. He said he had left his former business because he was afraid his mind would become affected. I considered him a morphin habitue or a subject of commencing general paresis. This was at least 4 years ago. Since that time he had been able to attend to his business and make a good livelihood. His wife for a long time had considered him erratic. I have subsequently learned he had had, before his business call on me, a great mental trouble which constantly preyed on his mind.

I suggested that his urine be examined at once for sugar and

albumin. Neither was present. I examined his lungs as well as possible under the circumstances and found nothing abnormal. I felt constrained to admit that I could not find any satisfactory explanation for his condition.

In view of the quickness of the rupture of the drum-head, the perfect drainage, the relief, or apparent relief from ear pain, as well as the normal character of the mastoid region, I excluded meningitis following ear disease as the cause of his symptoms. On account of his neurotic history and the suspicion of morphin, which I felt could reasonably be entertained, I concluded provisionally that it was a case of profound intoxication from grip with all the symptoms exaggerated by the nervous character and probable habits of the man. I turned the medical conduct of the case over to Dr. Valentine Wildman, with the request that he inform me of this condition in the morning. On the following morning Dr. Wildman telephoned that the patient had been ill all night and was then in a condition of vigil coma and that his right arm and hand were flexed and his fingers hooked and athetotic.

I saw him at 2:30 p. m. in consultation with Dr. Wildman. He was then insensible in coma vigil but somewhat restless. His right arm was flexed and his hand also. His fingers were contracted like a claw, the forefinger most of all, and his eyes were turned to the left in conjugate deviation, the left outward in the horizontal plane, the right one upward and inward. The pupils were small and reacted normally to direct light, slightly consensually. The optic discs were normal. He constantly made defensive movements with left hand and arm. His chin was turned to the right and upward but there was no rigidity of the neck worthy of mention. We examined his shins to discover, if possible, some stigmata of syphilis, but they were normal.

On consultation we concluded that the patient had meningitis of the frontal region and the left central convolution in the region of the arm, fingers and wrist centre and that there was an irritation there probably due to pressure; that the cause was either a tumor, an abcess or a localized exudate.

I could not bring myself to open the mastoid since there were no evidences of retained pus in that region and since the flow through the auditory canal was free and unimpeded; if the meningitis were due to an infection from the ear, the damage had already been done and an operation would be of no avail.

We considered the patient too near a lethal ending to

inject bichlorid hypodermatically or K I per rectum. In short, we regarded the case as hopeless and promoted euthanasia.

Dr. Wildman was in attendance during Wednesday night. The patient developed Cheyne-Stokes' respiration in the course of the night and died at 3 a. m. Tuesday.

Between 5 and 6 o'clock of the same day the cranium was opened by Dr. O'Hanlon in the presence of Dr. Wildman, Dr. Morgan and myself. The dura appeared normal but as soon as it was torn away, the pia was seen to be reeking with thin yellowish pus over the region of the right mastoid; there was a pial purulent meningitis, which further examination showed extended over the entire cortex and to some extent at the base of the brain; the pus, however, was most abundant on the right side. There had obviously been an infection from the ear. As soon as the entire brain was removed, careful investigation revealed a petechial redness on the upper surface of the petrous portion of the temporal bone, just where the vertical wall of the squamous portion rises from the former, in fact, over the tegmen antri. When the pia and dura had been torn away it was found that there was an aperture there large enough to allow the entrance of a hairpin. A hairpin, pushed through the opening, went readily down in the direction of the antrum and mastoid cells. The petrous portion of the bone was then removed by chisel, but unfortunately, in removing it, the small aperture was included in the cut, and though the specimen was preserved, the point of entrance of the pus into the cranial cavity was obliterated. The antrum and also the mastoid cells were found filled with yellow pus. There was apparently no breaking down of the walls of the antrum or the cells. Our attention was then directed toward the left side of the brain; minute examination of the cortex showed no sign whatsoever of any other condition than that which the purulent meningitis had caused. The interior was then examined by careful slicing but no sign of tumor, abscess or exudate appeared at any place. All the ventricles and the cerebellum were included in the examination. It was the opinion of all of us that the brain substance was extraordinarily flabby and soft. There was one interesting phenomenon in this brain outside the meningitis and that was the existence of symmetrical pial hemorrhages on the anterior aspect of the middle lobes of the cerebrum. They were practically identical in location, extent and character. They might be described as petechial. An ill-defined history of a fall, 2

or 3 weeks before, may have some bearing upon this fact—otherwise it is inexplicable.

Cases of o. m. p. c. in which infection has taken place through a diploic opening in the bone have been reported, but it appears to me that the rapidity with which infection took place and death ensued in this case renders it unique.

At first I was disposed to condemn myself for not opening the mastoid the night of my first visit, but on second thought I feel convinced that infection had already taken place and the meningitis was under way at that time; that an operation would have been of no avail even if the cause of the meningitis had been recognized.

The conjugate deviation to the left was difficult for me to explain. It has been claimed that there are communicating fibres between the centres of the external and internal recti muscles on the floor of the 4th ventricle, so that the centre for the right external rectus, for example, supplies not only its own muscle, but the internal rectus of the opposite side in associate movement. It is only on this assumption that conjugate paralysis can be explained. In this case, however, no paralysis existed, for Dr. Wildman made the observation later that the eyes occasionally turned in the other direction, so that the deviation may be said to have been an irritation deviation and not a paralytic one. The original position of the eyes to the left, however, is consistent with the location of the irritating lesion on the right side. I have no apology to make for having been deceived by the hand and arm symptoms; my conclusions were consistent with localization theories if not localization facts.

The only way conceivable in my mind, in which the lethal termination of this case could have been prevented was to have performed paracentesis a few hours after or just at the beginning of the middle ear inflammation, and yet, even this idea is open to objections.

Dr. O'Hanlon suggested that the entrance of atmospheric air through the rupture forced the pus upward into the antrum, the cells and through the diploic opening into the cranial cavity. A paracentesis might have produced the same effect if this explanation is the true one.

The sum of it all is that this patient would not have been infected by his ear if the diploic opening had not been present. It is a significant fact that the pain in his forehead and head became violent very soon after the rupture of the drum-head.

The unfortunate and rapid termination of this case accentuates the seriousness and gravity of acute inflammation of the middle ear and in my opinion the necessity of an early puncture when pain is severe and signs of distention are present. The possibility of the existence of diploic openings into the cranial cavity should always be borne in mind in cases of acute o. m. p. and we should not allow a long-continued immunity from disaster to beget over-confidence or lead us to minimize the dangers in this affection.

While I feel that the conduct of the case was consistent with reason in so far as operative interference was concerned, yet I feel that I erred in going far afield to find an explanatory cause for the condition when a nearer one was at hand, thereby losing the intellectual satisfaction of a correct diagnosis.

34 West 36th Street.

XLVIII.

A CONSIDERATION OF AND THE INDICATION FOR THE REMOVAL OF THE MIDDLE TURBINAL.

By B. R. Kennon, M. D.

NORFOLK, VIRGINIA.

In the large amount of literature which is constantly appearing on diseases of the nose and naso-pharynx, I have been surprised at the meagre amount of work which seems to have been devoted to the middle turbinal, considering the importance of its position and the direct and indirect evil consequences of its hypertrophy. Most of the text books give it but cursory mention under the general heading of hypertrophic rhinitis. The subject of this paper may be most conveniently considered under the following heads: Nasal obstructions, naso-pharyngeal affections, middle ear conditions, accessory sinus inflammations, and various reflex and nervous phenomena, viz: hay-fever, asthma, nasal headache, etc. Taking these up seriatim:

Under the first heading, when we consider the position of the middle turbinal situated in the direct pathway of the air through the nasal chambers, it can readily be seen how marked hypertrophies of this body will cause evil consequences upon respiration. The results obtained by the removal of said hypertrophies has given more certain and satisfactory results than when the septum alone has been attacked. It is usually found that the hypertrophy is a true increase in the bony structures and not an increase of the soft tissue, except in a small percentage of cases, and then only at its anterior and posterior extremities constituting the mucoid and lymphoid hypertrophy of Lennox Browne and the polypoid degeneration of other authors. This can readily be demonstrated by the firm consistence of the body of the bone, as shown by its resistance to the probe and the small amount of shrinking obtained upon the application of cocain and other astringents.

Do not understand me to underestimate the importance of deformities of the nasal septum, for the latter should in all

cases be made to conform as nearly as possible to the normal, since hypertrophic rhinitis most frequently has its beginning in the irritation and abnormal air pressure due to these irregularities, producing secondary hypertrophy of the middle turbinal. There are many cases of irregular deformities where all of our efforts for their relief will leave much to be desired, and it is especially in such cases that the removal of the middle turbinal will give the satisfactory result that can be obtained by no other means.

It has been stated that when the irregularities of the septum have been corrected and the consequent source of irritation thus removed, there will be a spontaneous shrinking of the turbinal body. This may be true in a very limited number of cases, if seen sufficiently early, but when we consider that there is an increase in the bony elements and a mucoid or lymphoid degeneration, it will be seen how impossible it is for this spontaneous shrinkage to take place.

Furthermore it is often impossible to remove the pressure with resulting irritation between the middle turbinal and septum except by the removal of a portion of this structure. This is especially true in cases of general thickening of the septum.

While considering the subject of the relief of nasal obstruction I have been particularly impressed with the undue importance which has been attached to the inferior turbinal by the unsatisfactory results obtained by its partial removal, as observed when there is a free passage in the inferior meatus, the patient still complaining of an obstructive and stuffy feeling in the nose.

This is readily explained by the fact that this is not the normal respiratory pathway, as may be readily demonstrated by having the patient inhale magnesium or any light powder, after which an inspection of the nose will show very little deposit in the inferior meatus.

Furthermore, the enlargement of the inferior turbinal is not due to a bony or mucoid hypertrophy, but is usually simply a congestion of its cavernous sinuses, and are effected by a hypertrophy of the middle turbinal in that the congestion of the latter will settle into the inferior when the patient is standing just as the lower side of the nose is effected when the patient is lying down, by the blood gravitating to the more dependent side.

The relief of this hyperemic condition of the inferior turbinal is usually rapid and complete after the removal of the middle.

The hypertrophy of the middle turbinal has a most important bearing in the causation of naso-pharyngeal and laryngeal catarrhal affections. Among the important causes of naso-pharyngitis is the dropping of secretions from the nose into the naso-pharynx, which acts in a two-fold manner, viz., by the irritation caused by the presence of the secretion and the injury done the mucous membrane by the constant hawking to dislodge it.

The insufficient evaporation in the nose in hypertrophy of the middle turbinal causes the air to reach the naso-pharynx insufficiently moistened, with the result that there is an evaporation of the watery elements of the secretion of the part, leaving the already increased mucous elements tenaciously sticking to the vault and posterior wall of the pharynx and acting as a foreign body thus increasing the inflammatory condition.

The effects on the larynx are much the same as those acting on the pharynx with the additional factors of mouth breathing and the direct extension of the inflammation from the pharynx to the larynx.

The baneful effects of hypertrophy of the middle turbinal and the beneficial effects obtained by its removal in catarrhal affections of the middle ear and Eustachian tubes are to my mind the most important, for here we are dealing with a condition that often baffles all efforts made for its relief and if not relieved or arrested, practically ostracises the unfortunate sufferer from the society of his fellows and in almost all occupations deprives him of the ability to earn a livelihood.

When we consider the position of the hypertrophied middle turbinal, with its posterior extremity, just above the tubal orifice, it is not strange that we should expect improvement in the ear and tubal conditions under consideration, from its removal.

The improvement in the hearing and the relief of subjective noises from the removal of the hypertrophied middle turbinal has been, in my experience, more certain and marked, than in those cases where the obstruction has been due to irregularities in the nasal septum. The deleterious effects on the ear and tube are brought about in several ways, viz., by impeding the return circulation from the tubes and middle ear, by preventing a proper aeration of the middle ear due to impaired nasal respiration, and secondarily through the pharynx, where we have a direct extension of the inflammation to the tube and mid-

dle ear, also the frequent stoppage of the pharyngeal end of the tube by the tenacious mucus in the pharynx.

There is a unanimity of opinion as to the advisability of the excision of the anterior end of the middle turbinal in purulent inflammation of the frontal, anterior ethmoidal and maxillary sinuses and of the whole bone where the posterior ethmoidal cells and sphenoidal sinus are involved, for it obstructs the view and drainage of their natural openings, making it essential to clear these outlets before other treatment is instituted. But in my opinion, the hypertrophy of the body sets up a catarrhal inflammation in these cavities by obstructing their ostea, preventing proper aeration and drainage and thus causing a decomposition of the catarrhal secretion, resulting finally in the purulent variety.

Probably more than four-fifths of all mucous polypi arise from the middle turbinal and bulla ethmoidalis. When found attached to the former it may be found more satisfactory to remove the bone, for the double reason that recurrences are much less frequent after this procedure and these polypi frequently arise between the middle turbinal, and the body of the ethmoid and it is only after the removal of the turbinal body that polypi in this situation can be satisfactorily seen and removed.

While I do not wish to make the claim that the removal of the middle turbinal is a panacea for hay fever and asthma, the results after its removal have been in my hands, better than from any other procedure.

Without going into the various theories of hay fever, I will say that I have never seen a case of this affection in which there was not turbinal pressure.

While the above condition is not so constant in asthma, the cases in which there is turbinal pressure hold out the most flattering hopes for the relief or alleviation of this disease by surgical means.

In my experience the cases of so called nasal (pressure) headaches have not been so frequent nor the results from the removal of the middle turbinal so flattering as some reports would seem to indicate.

I would remind those who have used cocain to cause shrinking of the turbinal and thus relief of these headaches, that it is the constitutional and not the local effect of the cocaine, which has brought about this result.

I would add in conclusion that in the large number of

cases in which I have removed the middle turbinal, I have not in a single case had any complaint of undue dryness of the pharynx of other disagreeable symptoms and think that we have in this operation one of the most valuable surgical procedures in the nose.

The method of removal. The difficulty of satisfactory removal probably accounts for the comparative small amount of surgical work which has been done on this body. In my hands nothing has been so satisfactory as the cold wire snare, but I will add that it was only after the most persistent and long continued efforts and after many failures that the necessary dexterity in its use was acquired.

I use a Sajous' snare as modified for me by Meyrowitz, by increasing the size of the thumb screw to one and a half inches in diameter and having two holes in its end to facilitate threading.

To gain a better view of the field of operation and more room for manipulation in the nose, I paint the inferior turbinal and septum, but not in the middle, as will be seen hereafter, with adrenalin solution 1-4000. It will be found that the principal difficulty is to prevent the loop from slipping off after the bone has been engaged. To obviate this as much as possible, I now use holocain solution 1%, which does not cause the contraction of the mucous membrane and other soft tissues of this body, as does cocain. This solution has produced as satisfactory anesthesia as has cocain in 4% solutions.

At times it will be found that it is impossble to engage the bone with the snare and then it will become necessary to resort to some turbinal forceps or scissors. Those of Lester have been quite satisfactory in my hands.

64 Granby Street.

XLIX.

THE CONSTANCY AND VARIATIONS OF THE SUPRAMEATAL SPINE OF HENLE.*

By Macleod Yearsley, F. R. C. S.

SURGEON TO THE ROYAL EAR HOSPITAL.

Until quite recently, in common with most otologists. I believe, I considered that we possessed a guide to the mastoid antrum which was, to all intents and purposes, infallible. In opening that cavity I have always taken the suprameatal spine of Henle, when present, as my landmark and I have never failed to reach my destination. In the monograph[1] which I had the honor to translate, Broca remarks: "L'Epine de Henle, losqu'elle existe, est un repere operatoire precieux." Dench, in his communication on "The Operative Treatment of Mastoid Inflammation,"[2] says: "The bone should first be removed as close to the posterior wall of the bony meatus as possible, and not above the level of the *spina suprameatum.*" Orne Green[3] also gives the spine as the upper limit for the removal of bone and all other works which I have consulted give this landmark or, if they do not mention it, give measurements which tally wlth its position. This position, moreover, agrees with Macewen's triangle.

At a recent meeting of the Otological Society of the United Kingdom,[4] however, my colleague, Mr. Arthur Cheatle, showed 18 adult temporal bones of various ages, showing some fallacies of Macewen's triangle as a guide to the antrum.

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*Author's Abstract of paper read before the 7th International Congress of Otology at Bordeaux, August, 1904.

[1]Anatomie Chirurgicale et Médécine Opératoire de l'oreille moyenne, par A. Broca, Paris, Masson et Cie, 1901.

[2]Transaction of the VI International Ototogical Congress, 1899, p. 150.

[3]Text Book of Diseases of the Eye, Ear, Nose and Throat, De Schweinitz and Randall, Vol. II, p. 794.

[4]Journal of Laryngology, Vol. XIX., No. 5, p. 271.

These, with a number of others prepared by him, Mr. Cheatle kindly placed at my disposal for examination. In many of these sections the antrum lies entirely above the spine, whilst, in a few of them that landmark, if followed too closely, would lead one directly into the middle cranial fossa.

Now, although Mr. Cheatle's sections increase our knowledge of the vast variability of the relations of the mastoid antrum and consequently emphasize the importance of care in opening it, I don't think that they necessarily invalidate the claims of Henle's spine as a valuable landmark when present. I recently performed a radical post-aural operation in which the antrum proved to be altogether above the level of the spine, yet, using the spine as my guide, I reached my objective without difficulty. Although Mr. Cheatle's work warns us to be careful, one need not therefore abandon this guide in operating, and I believe it to be, when present, the most reliable that we possess.

In this belief, one is naturally anxious to ascertain the constancy with which the spine of Henle is present, and I was not satisfied with the information already in our possession upon this point. In the monograph referred to, Broca states that Kisselbach found it present 82 times out of 100, Schultz 109 times in 120, whilst Lenoir only found it absent once in 100 skulls, that is to say once in 200 ears. The sum of these observations makes the spine absent 30 times in 420 cases, or in 7.14 per cent. It will be noted that in the three investigations the percentage of absence ranges from 18 per cent. (Kisselbach) to 0.570 (Lenoir), which is somewhat wide. It appeared to me that no one had as yet examined a sufficiently large number of skulls to accurately gauge the frequency of the landmark. I therefore examined 1,017 skulls—representing 2,000 ears—in the museum of the Royal College of Surgeons of England, and the results are embodied in this paper.

Of the 1,017 skulls, 659 were males, 281 were females, and in 77 the sex was doubtful. The ages varied from 4 to 112 years, the four oldest being two Dutch males of 107 and 112 and two Dutch females of 106 and 110. The nationalities included the principal races of mankind.

As some of these skulls were wanting in one temporal region —I purposely did not make my examination selective—the ears they represent are exactly 2,000. The spine of Henle was absent 160 times, or 8 per cent. On the right side it was absent 39, on the left 53, and on both sides of the same skull

34 times. In addition, however, it was extremely badly marked in 257 examples, or 12.57 per cent. In these latter cases the spine was just recognizable to the trained eye and finger, and I exercised considerable care in distinguishing between instances in which it was just indicated and those in which there was complete absence. The number of cases in which complete absence on one side was accompanied by a very badly marked spine on the opposite side was 47. In all other skulls in which the spine was absent on one side it was well-marked upon the other. Therefore skulls with the spine slightly preponderated over those in which absence on one as 47 is to 45. As regards sex, absence of the spine was slightly more frequent in females than in males (as 61 to 53).

If the supra-meatal spine is absent to the extent of 8 per cent. (a figure which corresponds with the combined results of Kisselbach, Schultz and Lenoir), we cannot place complete reliance upon it as an operation landmark. In cases of absence, unless measurements are taken, to what are we to turn for guidance? My reply is that there is a much more constant guide than the spine. In a fairly typical temporal bone there is to be seen, just behind the supra-meatal spine, a slight excavation, varying in shape, size and depth, but always pierced by a varying number of foramina. This is the *supra-meatal fossa,* and that I have found to be present in every one of the 2,000 ears examined. Its aspect varies greatly. It may be a large and excavated triangular depression, cribiform and pierced; it may be a slight circular of oval hollow sparsely pierced by foramina; it may be a mere slit behind the supra-meatal spine; or it may be represented by one large or two or three small foramina. But not in a single specimen was it such that it could not have been readily recognized during operation. Indeed, when the bone is freshly denuded of its periosteum these foramina show up on the white surface as small red points.

It is, therefore, obvious that the supra-meatal fossa is superior to the spine of Henle as a guide in opening the mastoid antrum.

The reason for this greater constancy of the fossa over the spine lies in its origin.

The spine of Henle is, as pointed out by Broca[5] from the work of Lenoir and Millet, wholly unconnected with the tympanic ring, but rather to be considered as developed from

[5]Opus cit., p. 3.

the osseous point known in embryology as the *epitympanal* of Geoffray Saint Helaire. In old horses, at the spot where the spine of Henle is found in man, a special bony point can generally be seen, distinctly separated from the tympanic ring and not in the least united with it. This observation I have confirmed by the examination of several skulls of the *Equidae*. I have also examined the skulls of 5 gorrillas (*Troglodytes gorilla*), 12 *chimpanzees* (*Anthropopithecus trytodytes*), 12 *orang outans* (*Simia Satyrus*), and one gibbon (*Hylobates sp. incerta*), and found both spine and fossa recognizable, the former quite distinct from the tympanic ring. I also examined the skulls of 80 monkeys and found that the spine was marked, distinct, or easily recognized in only 29. The fossa was, however, indicated in a greater number. It was a noticeable fact that the higher the monkey in the scale, the more constant is the landmark under consideration.

The spine of Henle cannot be relied upon below 4 years of age. Lenoir came to this conclusion from the examination of the mastoids of 30 children. In infants, however, there is a landmark which is very characteristic. I have already pointed out the frequency with which the supra-meatal fossa is quite cribiform from the number of vascular foramina and these foramina are often spread over a wider area than that occupied by the fossa. In the infants, these foramina transform this part into a sieve-like plate of bone, which is seen as a very marked, purplish lamina when operating upon or dissecting this region. Broca, who named this spot *tache spongieuse*, states that he has always seen it in the foetus of more than 8 months and in children under 2 years. It is first situated above the meatus, then above and in front; later it comes to coincide with the supra-meatal fossa. It is stiuated exactly over the antrum and changes its level as the antrum changes its position, as growth proceeds. The importance of this *tache spongieuse* lies in the fact that it transmits numerous small vessels into the interior of the bone. The supra-meatal fossa with its vascular foramina in varying number is the adult condition of the infantile *tache spongieuse* and this accounts for the fact that it is practically never absent, although it may be reduced to two or three small foramina or even a tiny slit.

The relative greater constancy of the supra-meatal fossa makes it a more reliable guide to the antrum than is the spine

of Henle, and this value is enhanced by the fact that it is present, as Broca's *tache spongicuse,* from birth.

The variation in size and shape of the spine and of the fossa which the examination of a large number of skulls reveals is considerable. These variations are not, however, of any special importance. In conclusion, I wish to add a few words as to the relative frequency of the spine of Henle in different races. It appeared that in no particular race was absence more common. As a general rule, the more massive the skull and the more developed the ridges and surfaces for muscular attachment the more likely was one to find the spine present and well-marked. Among negro skulls, for instance, the spine could always be easily recognized, whereas among female skulls and in highly civilized races, instances of absence were more likely to be found.

L.

A SPECIAL SYNDROME OF ENDOCRANIAL OTITIC COMPLICATIONS (PARALYSIS OF THE MOTOR OCULI EXTERNUS OF OTITIC ORIGIN).*

By Professor G. Gradenigo.

In three successive communications[1] to the Royal Academy of Medicine at Turin, I took occasion to draw attention to a special morbid syndrome, characterized by the association of acute otitis media accompanied or not by external suppuration, with very intense pains, localized in the temporal and parietal region, and with a paralyisis or paresis of the external motor oculi nerve of the same side as the aural lesion. I have seen six cases of this disease, and as a result of my communications, my colleagues Mongardi (of Bologna) Ricci (of Treviso) and Citelli (of Catane), have kindly sent me the histories of three other cases. In reviewing the otologic literature, I have been able to collect twelve other cases of which four were reported at the last session (May, 1904), of the French Society of Otology and Laryngology (Lannois and Ferrand, Lubet-Barbon and Cheval,. The authors have given different interpretations to this particular association of symptoms.

The study of my cases, compared to that which has been published, permits me to draw the conclusion that, this syndrome of clinic symptoms is the result of a circumscribed purulent simple serous leptomeningitis, localized about the tip of the pyramid, and caused by the diffusion of the infection in the tympanum. The constancy of the clinical picture makes me believe that the propagation was along the pre-existing anatomic paths. Usually, the leptomeningitic focus tends to get well of itself, or following treatment of the drum (paracentesis) or of the mastoid, done to eliminate the aural infection; in certain cases the spread of the meningitis caused the death of the patient. From these facts the diagnostic importance of this syndrome is apparent, as is the necessity for considering its termination, in spite of its apparently benign character.

*Read before the International Congress of Otology, Bordeaux, August, 1904.

(1) Jan. 29, Apr. 21, June 17, 1904.

LI.

ASSOCIATED OTOMYCOSES (A VESICULAR-PUSTULAR AFFECTION OF THE EXTERNAL AUDITORY MEATUS CAUSED BY ASSOCIATED MICROPHYTES AND PATHOGENIC BACTERIA. DIAGNOSIS AND TREATMENT.

By Dr. Louis Bar,

NICE.

There are numerous kinds of polymorphic affections of the external auditory meatus, phlyctenular or vesicopustular, which are caused by more or less well defined microorganisms, and which are more or less easily curable. In such cases there should be no difficulty in diagnosing them from furuncle, or the changes due to herpes, eczema or even syphilis, although striking resemblances to cases of this kind demand a precise diagnosis. In this disease, there is an otitis externa diffusa with very marked characteristics, an otitis which is mild and very painful in the different phases of the disease, more or less secretion and even hemorrhages, being somewhat analogous to the mycotic inflammations of the external auditory canal. In certain points they recall the disease which Politzer[1] called "Otitis parasitica," and to which Weiden[2] had assigned the aspergillus as a cause; disease whose origin Virchow tried to recall by the name otomycosis, while to observations by Mayer[3], Paccini[4], Carl Kramer[5], Schwartze[6], etc., were added the contributions of Burnett, Blake, Patterson, Cassels, Bezold, Lewemberg and others which were important in establishing their pathology. In a previous publication, devoted to otomycoses[7] I tried to add to the study of this disease, as much

*Read before the International Congress of Otology, Bordeaux, 1904.

(1) Politzer—Text-book of Diseases of the Ear.
(2) Wieden—Monograph, 1888.
(3) Mayer—Arch. f. Anatomie (Muller's) 1866.
(4) Florence—1851.
(5) Viertaljahrschr. d. Nature (Zurich 1859-1860).
(6) Schwartze—Surgical Diseases of the Ear.
(7) General Studies and Experiments on Otomycosis (Moscow, 1897).

to its deliniation as its therapy, while in another work of the same kind[8], I called attention to the fact that otitis externa diffusa is caused not only by the aspergillus, but also by other microscopic fungi, such as the tricophyton. According to bacteriologic studies, the cases of otitis externa whose observations I will report later, do not appear to belong to the same class of otitis parasitica as those due to the aspergillus and tricophyton, because of this one difference, that instead of being simple, and caused by only one microphyte, they are complex and caused by associated organisms. In short to that generic element the microphyte, there is added the most diverse micrococci whose presence contributes to the virulence and stubbornness of the disease. For the parasites present having caused a stubborn inflammation, as will be seen below give way to frequently recurring inflammations of the external auditory canal and tympanum, whose nature is frequently unknown, and which is one of the most frequent of the non-traumatic external otitides in the adult. The microorganisms are especially the mucedins (aspergillus glaucus et niger, escophora elegans, trichothecium roseum, mucor mucedo, oidium albicans) which are unable to attack the auditory meatus of man at first, since no mucedin can live in the normal skin of the meatus, but without doubt, as Schwartze thought and as seems to be proven by my observations, its entrance into the integument is due to some abnormality, such as a detachment of the epidermis, and excoriation, or a superficial inflammation of the skin, where the micrococci are already present and rapidly increase. Here the different micrococci (streptococci, staphylococci, and even the coli bacilli) find suitable nutrition; they germinate and multiply rapidly, while their presence in and on the epidermis gives a complicating character to the previous inflammation, which latter might be called the preparing disease. There can then appear an otitis externa hemorrhagica, preceded by the parasitic inflammation, which soon dominates the scene; or a severe dry hyperemia followed by a very severe inflammation may give way to a caseous or pseudo-membranous exudate, which can be detached only with great difficulty, which is constantly renewed, and which each time that it is removed reveals the subjacent lining of the meatus and the red tympanum. The entire canal, even its superior part, deprived for a large part of its epidermal coat,

(8) Tricophytes of the External Auditory Meatus (Congress at Paris, 1900).

shows in its place scales, masses more or less adhering to its epidermis, infiltrated, in places, with spores of the mucor, with or without micrococci. More recently I have observed that the blebs or phlyctenula filled with red blood, or purulent fluids are frequent in the diseased meatus. They seem to follow the erythema. They are rarely absorbed. They rupture, and when their contents are discharged, they dry up and are soon detached as scales. At the same time, also, vesicopustules follow hyperemic macules. If they remain simple vesicles, they break and dry up when they are in the interior or at the entrance of the meatus. If they become vesicopustules, they cause profound changes in the dermis. They are very painful. They become umbilicated or rupture to form an ulcer whose red base comprises the deeper layers of cells, the Malpighian, and whose borders are enclosed by a dry cornified zone, which adheres for a long time. In certain cases, however, they form numerous, true abscesses, which close the lumen of the meatus and which either by their appearance or their pain resemble the acute ulcerating tumors of tuberculosis, so that they should be the cause of frequent errors in our daily practice.

The polymorphism of this affection is an evident reason for its difficulty of diagnosis. Really, it can not be actually established except by a microscopic examination of the material directly removed *a loco dolente.* It should be examined as soon as possible, and again immediately after the results of the culture made direct from the meatus are known. These cultures made at the temperature of the room or a constant temperature of 38° at the Pasteur Institute on gelatine or better on Raulin's fluid, give, after 48 hours, the first signs of development of microorganisms, and this continues for some time, since we know tubes where the development has gone on without stopping for three months. Seen under the microscope (Leitz No. 4. obj. i. e. 960X). the mass removed from the diseased ear and the cultures present different appearances. Stained with Kuhn's fuchsin-phenique (carbol-fuchsine), the specimens show very clearly myocelium filiaments, some single, some branched, sometimes budding, sometimes in full bloom with their hyphes and gonoids. Certain specimens, however, show only spores which are free and very mobile[1]. In most of the specimens, I noted the presence of different bacteria,

(1) Investigations made at the Laboratory of Hygiene of the city of Nice, in collaboration with Dr. Beunat, of the laboratory, whose assistance has been very valuable to me.

such as the streptococcus pyogenes, staphylococcus, and diplococcus; micrococci in a diffuse mass and even the coli bacillus (a specimen of Beunat). In the diseases of the ear, the presence of the coli bacillus could justly cause surprise, if it were not for the well known tendency of the bacillus, indigenous to the large intestines, to wander, even into the meninges, where it finds a favorable soil and causes a meningitis purulenta. But whatever be the pathogenic bacterium, microorganisms belonging to the lowest order of vegetables, their presence by the side of cryptograms and algees in the course of an inflammatory disease, seems to me to give to the latter all the morphologic appearances of a mixed infection, being at the same time a disease clearly parasitic and clearly infectious. In the same way it seems to me that physiologically, the kind of otitis should have the characteristic of the one or the other, according to the dominating element in each case. Therefore, our patient sometimes has to endure very severe and painful symptoms, while others suffer only a nervousness due to a continued otorrhea. As a result, the symptomatology is variable, according to the species of the parasites, their pathologic action, their stenosing of the external auditory meatus, or their presence deep down, and the subjective state of the patient. Statistics give a relatively small percentage, 0.1, of otomycosis, which is at the same time the simplest and most studied of this class of affections. Bezold at Munich found the percentage 1.5, but no conclusion can be drawn from this because there was little true diagnosis, due to the fact that because of the lack of time, they rarely used the microscope, and because confusion with other otitides diffusae externae is very easy.

Considering the ease with which these microorganisms are communicated, and their growth on culture media, we can declare that it is certain that this disease is contagious. Likewise there is no doubt that the spores of the parasites are carried into the meatus by non-aseptic instruments, badly kept syringes, instillations of contaminated solutions, and finally by instillations of oily substances which remain in the ear and furnish an acid soil, so favorable to the development of microphytes. I have already remarked that an otitis externa parasitica is hard to cure, that is, its prognosis. The persistence of the disease depends not only on the microphytes and schyzomycetes which cause it, but also on the association of these with pathogenic bacteria. The otomycosis is stubborn,

nevertheless it is completely curable, if one has the patience to continue treatment, which, ought to be continued to complete cure, however complicated and associated with pathogenic bacteria it may be, or however involved in the usual complications which the different microrganisms cause. The otomycosis, as we have seen, can be completely cured, however complicated, but the work is doubled. It is necessary that neither patient nor doctor give up, for it is only after very long treatment, and earnest, diligent, various though uninterrupted efforts, only after having passed the aftermath of unexpected and inexplicable relapses, that we arrived at definite results. Except the possibility of tympanic perforation, as Bezold and Politzer fear, and except the hypertrophy of the integument of the meatus auditorius externus, to which the mild but tenacious inflammation disposes, we need dread only neurasthenia, which is induced by an affection that never gets well. Furthermore, many nervous sounds may result from it.

If the single otomycosis responds to the indications, which are precise enough though variable, and which results in a cure in one or two months, it is necessary to admit that in associated otomycoses, it is not the same. The most varied treatment remains often without effect, and this class of otitis resists most stubbornly the usual antiseptics. While we have employed in the simple cases, with much success, lavage of the meatus with solutions of calcium hypochlorite 0.1 to 200-300 of filtered water, recommended by Wreden; while absolute alcohol, tannin and alcohol 1% of Weber Liel, 2% salicylic acid of Bezold, 2% carbolic acid, and subacetate of lead V-X drops in a glass, of water have been recommended as sometimes useful, we are able to state that the associated forms of otitis externa parasitica have been, in our experience, always refractory not only the usual indication but also to solutions of sublimate and cyanide of mercury, of each 1-100: that they have been unaffected by applications of the tincture of iodine and nitrate of silver; that a saturated solution of boric acid in alcohol seemed for a while to give hope, but that it was necessary to give it up on account of the irritation and caustic action caused by it. The usual resources being so futile, we have studied microscopically the microphytes and bacteria for a new tentative therapy. This seemed to us should be founded on the variety and mode of life of the microbic elements found in the microscopic examinations we have made of our cases. Now, the biology of bacteria has

informed us that the spores of the schyzomycetes and microphytes are, in general insensible to physical and chemical influences, that they are even refractory for a long time to temperatures around 212°, and that their vitality is extraordinary. Gruber, who was the first to study this question seriously arrived at this conclusion, that the only indispensable condition in the development of the oidium albicans is the constant presence of a medium impregnated with a sweet or amylaceous substance, which is fermentable, and consequently acidifiable. Now it is logical to conclude, by analogy with their congeners, that an acid medium is the one favorable to the development of the mucidines, and that the acid of the mucus in which the parasitic concretions are continually bathed, a phenomenon consecutive to parasitic development, contributes, when once produced, to the welfare of the cryptogenous vegetations. And it is also logical to conclude that every alkaline or alkalinifiable medium is or should be unsuitable to the vitality of cryptogams. As a result of these biologic considerations we have been led, in the treatment of those otitides whose fundamental cause is a fungus schyzomyces, to try the rational means which study as well as experience showed to Niemeyer and Gruber as the most efficacious in arresting the development of and the destruction caused by the oidium albicans, namely, the cure of thrush.

In the treatment of this class of cases, we should use alkalines. But since a large part of the virulence of this particular inflammation of the external auditory canal must be attributed to the pathogenic microbes that accompany the microphytes, we have added to the alkaline solution an energetic non-acidigenous antiseptic such as sublimate, which seems best for the purpose. Furthermore, considering the well known insensibility of the spores of the schyzomycetes to physical and chemical changes we have used medicated alkaline solutions in the form of profuse irrigations, in order to add to the chemical action of the alkali, the mechanical action of lavage with large quantities of fluid, the only method of removing from the meatus, the spores or gonoids, which are surgically inaccessible.

The method of treatment of associated otomycosis may be outlined as follows:

(1) Daily cleansing of the diseased meatus, so as to remove completely the integument that is not ulcerated, the

scales, the concretions and the caseous deposits that clog the meatus.

(2) Immediately following the cleansing, and several times a day, according to the importance of the case, a profuse lavage of the canal with a solution of distilled water containing to the litre 4.0 of sodium bicarbonate or borate, to which has been added 25 centigrams of sublimate.

(3) Insert in the meatus a wick of sterile gauze saturated with the alkaline solution, in order to keep the walls of the meatus apart, and to prevent as far as possible all auto-infections.

(4) As an internal treatment, alkalines or malt.

In certain ones of the cases we treated, the treatment was immediately followed by an encouraging result, although all treatment had been ineffective. From the very first alkalino-antiseptic application, the cryptogamous concretions were detached with an every increasing facility, the white foci disappeared to reappear more mildly and less intense, the redness and heat of the meatus diminished as the cure progressed. Nevertheless the cure was prolonged, and this rebelliousness proves how tenacious this affection is but in spite of everything we are able to say henceforth without fear of contradiction that whoever has to treat a case of associated cryptogamous otitis will not find, for the present at least, any treatment so rapid, so efficacious and at the same time so simple as that of an alkaline with sublimate, as has been given above.

To summarize:

Certain diffuse otitides externæ with phlyctenulæ or vesicopustules are only simple or associated dematomycoses with different pathogenic bacteria, which cause polymorphism and difference in intensity.

Although their evolution is characteristic of the different schyzomycetes (aspergillus glaucus et niger, oidium albicans, mucor mucedo, tricothecium roseum, tricophyton of Molstein, etc.), which cause them, by virtue of their association with different pathogenic bacteria (streptococci, staphylococci pyogenes, micrococci, etc.), they acquire certain influences which profoundly modify their symptoms, course and termination. These are e. g. frequent hemorrhagic phylctenulae at the beginning of the disease, vesicopustular forms, inflammatory stenosis of the external meatus, whitish deposits and pseudomembranes.

Resistent to all simple treatments, these parasitic otitides be-

come more and more severe, intractable, and recurrent because of the microbic complication. They always yield to treatment after a longer or shorter time.

In carrying out the treatment, we remember a fermentable and acidigenous medium is the condition favorable to the development of microphytes, and it is necessary to make the medium alkaline and antiseptic. Rationally, and by analogy, the treatment of thrush would be the best applicable to the ear. Profuse lavage with an alkaline sublimated solution, i. e., an antiseptic, non-acidigenous, alkaline solution, is indicated.

Case I. M. T., Moscow, act 56, without special history, was sent to us by our worthy confere Dr. Ollnitz, for abscesses of the left auditory meatus, abscesses which apparently showed so perfect a resemblance to those which characterize furunculosis, that we came to that diagnosis, and hoped for a speedy cure by the method of Lewenberg, alcohol borated to saturation, incision of the abscess. But there was no amelioration, and as the meatus had become stenosed, two days later, by the inflammation and abscesses, we repeated the necessary incisions, and after an energetic curettage placed a drain in the meatus. Relief, but not radical. Then the same conditon appeared again. We asked for an analysis of the mass removed from the meatus, which was made by Dr. Beunat. Culture on gelatine at 38°; development in 48 hours. After staining with Kuhne's blue the microscope showed—micrococci, a few streptococci, staphylococci tetragenes; (2) plaques of the same elements; (3) plaques of Kuhne's blue, bacilli and diplococci; bacilli resembling in every way coli bacilli (Beunat). Some days later, the right ear of the patient became affected and a microscopic examination showed, after culture on gelatine, the presence of mycelia and streptococci. Treatment—various solution, sublimate 1-1000, 1% carbolic acid, 10% silver nitrate, tincture of iodine, boric acid, salicylic acid, potassium cyanide, etc. Malt was also tried, with no good results. The idea then came to us to try treatment with alkalines, and cure was reached in 4 weeks, after previous treatment of three months. May, 1904. Having every day completely cleansed the meatus with the curette, of all thrush—purulent secretion, we had the disappointment of seeing it covered again with vesicopustules, some superficial, others deep, surrounded by a scaly and regularly pitted zone, at the bottom of which, a red zone showed the Malpighian layer, the whole covered with a

purulent secretion or sprinkled with whitish thrush. After treatment by cleansing and profuse lavage with 4% solution of sodium bicarbonate and 1 pro mil. sublimate, the patient experienced an amelioration which led to a complete cure.

Case II. Sch., German, 25 years old, was sent to us by our worthy colleague, Dr. Wolff, on account of severe pains in his ear, and the hemorrhages which indicated an otitis hemorrhagica externa. The patient had become better after long and assiduous treatment, but while convalescing, and while his meatus was very delicate, he suddenly returned to ask us to examine his left ear. The integument had become red, and was covered with whitish spots, similar to a deposit of frost. No new eruption of hemorrhagic phlyctenulae. Culture and analysis: Mycelium and micrococci. We tried lavage with calcium hypochlorite, which extremely irritated the meatus. Two days later, the right ear was affected. From then on, we used regularly alkalines and sublimate which quickly gave a favorable result, which was a radical cure only after some weeks.

Case III. M. R., young woman, 24 years old, was sent to us by our distinguished confrere Dr. Gaziglia, for a suppuration of the ear, and progressed well towards cure, after we removed a large polyp from the posterior superior segment of the left external auditory meatus. Suddenly she returned to have us see the meatus, and the seropurulent discharge. We found a white mass in the meatus, and each time, the lavage removed small whitish concretions mixed with epidermal scales. Roughness of the dermis of the meatus over which were disseminated innumerable small switish spots. Culture on serum, gelatine and the mineral solution of Raulin. Growth after 48 hours. Microscope of 960-D showed mycelia with their spores, epidermal cells and micrococci. The alkaline-antiseptic treatment, amelioration, very marked. Diffuse cauterization with silver nitrate or zinc chlorid. Result nil. Amelioration evident as soon as we recommended the treatment with sodium borate, etc. After two months, the cure was not yet complete. Departure of patient.

Case IV. M., Monte Carlo, youth 16 years old, anemic, was sent to us by our distinguished confrere, Dr. Colliquin of Monte Carlo, for suppuration of the left ear, which promptly became better on the extraction of a huge polyp from the meatus. There was only a slight oozing. Soon we found, in the operated ear, hemorrhagic phlyclentulæ, detached epidermal scales, and white, disseminated spots. Same culture, same

findings, same treatment as Case III. Cure was almost complete in 6 weeks, but treatment should have been continued longer.

All these cases show by their symptoms, as well as by the microscopic examination, the same disease, associated otomycosis. Three of them showed what we said on the subject of inoculation by spores, viz., that an excoriation of the skin or some anomoly of the dermis seems indispensable for the penetration of the gonoids. Furthermore the efficacy of the alkaline treatment answers both theoretically and practically in checking and destroying the vitality of the microphytes, to which an acid medium is absolutely necessary. The cases we have just quoted conform to the resume, with which we closed our study.

LII.

THE TREATMENT OF ACUTE OTITIS MEDIA. REPORT TO THE FRENCH SOCIETY OF OTOLOGY AND LARYNGOLOGY, MAY, 1904.*

By Lermoyez, Lubet-Barbon and Moure.

That we must take care of a diseased organ is one truth, and that we must examine the organ in order to care for it is another. These two affirmations depend upon good sense; unfortunately when applied to the ear, good sense ceases to be synonymous with common sense.

In olden times the otitis was not treated. The ignorance of the physicians was in accord, at best, with the prejudices of the patients, so that they calmly waited for the humors of the ear to purify. The present method is different: the ear is cared for. It may be treated badly; dirty dressing of the auditory canal with soothing ointments, warm oils or laudanum are injurious things. Sometimes the progressive physician prescribes profuse injections of boric acid and carbolized glycerine into the suffering ear; however, the work is still not so perfect that it might not be better.

"But what is it that causes so much anxiety," say the physicians to us. Affections of the ear are, especially in children only insignficant evils which cure themselves. Certainly, they assure us, aurists are mistaken about the pretended gravity of otitis inasmuch as they are only called to treat the grave cases which are sent to them. Such at least is the feeling in certain quarters. What shall we answer? We may say, in the beginning, that it is irrational in our age of technique, to treat organs by conjecture. Should a pneumonia be treated without auscultation? It is better, however, to explain to the physician that they are deceived in their turn by an over amount of faith, when they think that an otitis is well cured because the ear shows no evidence of pain or discharge. It is too often subject to recurrence and full of danger in the

*From Ann. des Mal. de l'oreille, du larynx, du nez et du pharynx, May, 1904.

future; like appendicitis. The discharge from the ear does not cease; slowly and insidiously it continues in its march to meningitis which kills and deafness which cripples.

There is more. A great reproach has come to aurists on the ground that, by their local manipulations, they increase the gravity and the duration of the acute otitis media. Certainly that must be denied, for, after all, is not a plea for the aurist a defense for the ear? However, we admit that since Zaufel showed almost twenty years ago that otitis is the result of pathogenie microbes, we thought that we were obliged to attack them by a series of antiseptic acts which proved to be more zealous than reasonable on our part. Certainly, it has happened more than once that such a suppuration of the ear would have been quickly stopped if it had not been kept up by a series of profuse injections, of vigorous inflations and of repeated bactericidal dressings. But since then, time the great moderator, has passed and from our old errors is born our present experience. The mature epoch of otology does not deserve the reproaches which encompassed its youth. Twenty years of life have calmed its therapeutic furor.

The time has come when the hope of treatment of acute otitis seems to have been realized. This we undertake to show in this report.

THE NECESSITY FOR TREATING OTITIS MEDIA ACUTA.

There are two things which demonstrate this necessity: the gravity of the otitis, whether it is untreated or badly treated, and secondly the benign character of otitis when properly treated.

The gravity of otitis media acuta when untreated or badly treated is demonstrated; 1st by the relative frequency of early complications, mastoiditis, purulent sinuses of the neck and meningitis; 2nd by the facility with which the discharge spontaneously checked, but not drained, may set up remote accidents, caries or cholesteatoma of the petrous, thrombophlebitis of the sinus, cerebral abscess; 3rd by the cicatrization which is often vicious when it is not watched, causing destruction of the drum membrane or adhesion of the ossicles; the patient has then purchased his life for the price of an incurable deafness.

The benign character of otitis media acuta which has been well treated is recognized by the usual absence of these com-

plications. Rapid death, indefinite chronicity and remote deafness almost never occur.

We will not take the time to report cases, numerous and easy to find, which support these two propositions. They are to be seen in the case books of every practitioner. On the other hand, our opponents may present those very numerous cases of otitis media acuta, particularly the mild infantile cases, which are perfectly relieved without treatment. Perhaps they may be so ungenerous as to mention those cases of sub-acute otitis media which evolve with such a virulence and upon such an unfavorable soil that the aurist, even if called at the outset of the disease is powerless to arrest its progress or to circumscribe its dangers. Indeed this argument is weak; by generalizing in the same way it might be claimed that there is no use to treat appendicitis because many cases of light colic called appendicitis cure themselves, and because there exists forms of hypertoxic appendicitis in which surgery is entirely powerless.

The best means of convincing physicians and patients of the real necessity for treating acute otitis media is to establish extensive statistics made entirely by otologists, for they alone observe otitis in a scientific way. This will be composed of two parts. The first group will include cases of otitis treated rationally and in time; they will not fail to show that in these cases rapid and absolute cure is the almost constant termination. A second group will include those cases of complicated otitis, otorrhea, of adhesive otitis which we are called to see when medicine fails—it is doubtless very easy to establish that the origin of almost all these cases is to be found in an acute otitis media which has been untreated or badly treated.

THE RATIONAL MANNER OF TREATING OTITIS MEDIA ACUTA.

A knowledge of the pathology of an affection alone can indicate the rational treatment. We know that acute otitis media is almost always consequetive to an ascending infection carried to the tympanum by the tube; it is a centrifugal affection—rhinogenous. The inverse cases, centrifugal, are rare: those in which an injury of the drum originates the trouble; those in which a myringitis of other origin precedes the otitis. Cases of hemotogenous acute otitis are theoretically imagined in order to fill an empty place in our nosology.

Pathogenic microbes, introduced into the nose by any con-

tagion whatsoever or increased in situ by an attack of cold, spread and multiply in the epipharynx; pass into tube by the assistance of a violent blowing of the nose and arrived in the blind alley which forms the middle ear.

Arrested here, they are installed, some in the tympanum, some in the mastoid antrum, chambers which communicate by a narrow passageway. Very soon they become numerous and attack the mucosa which, however, has already prepared its defences. It is congested, swollen and infiltrated with lymphocytes, and if this first reaction is not sufficient, it secretes mucus or mucopus; an effusion is established; the tube is closed somewhat later because its mucosa contained in an inextensible tube can only swell so far as its caliber allows. The middle ear then becomes a closed cavity—there is retention. On account of this there is pain from pressure upon the sub-mucous nervous plexuses, infection by resorption of the toxico-microbic products, secreted in a region where the tissues are eminently absorbant, and various complications, depending upon the place in which there is an injury to the walls of the middle ear subjected to a progressive pressure. Generally it is the membrana tympani which yields. The symptoms are lightened and pus flows into auditory canal which more or less completely drains the ear. Nature thus decides to evacuate the exudate, inasmuch as, after some days of waiting, the physician himself has not decided to do so. But this perforation is only a fistula with all its complications.

Nevertheless things could happen differently. It might occur that spontaneous perforation of the drum does not take place, either because the exudate is small or because the tube is not so tightly closed that drainage is impossible; this is very fortunate. But the drum may not yield because it is too resistant, so that the pus must seek another outlet through the thin and often fissued cranial walls. This is unfortunate and often grave.

The clinical features of otitis media acuta are therefore variable. The affection differs according to the greater or less virulence of the bacteria, the variable fertility of the soil on which they are cultivated and the age of the individual upon whom they are inoculated.

Text books divide acute otitis media into (a) catarrhal; (b) exudate; (3) purulent. However, this division is schematic, made to accommodate the needs of a classification. In the clinic we pass this by for we know that besides these three

forms there are many intermediary, but we do not ignore it as we frequently see the transformation of one form into another in the same person. So guided by it we will consider acute otitis media *en bloc;* it will be for us a unit.

Since, therefore, knowledge of the pathogenesis of otitis dictates treatment, the danger is in the retention, the safety is in the drainage. The treatment of otitis has nothing in it that can be considered mysterious by the physician. It is expressed thus *ubi pus, ibi evacua.* Another thing is equally necessary in order to conduct the treatment of otitis; knowledge of the local anatomic characteristics.

Two points are to be considered in this regard.

I. The different compartments of the middle ear, particularly the tympanum and mastoid antrum, communicate largely with one another. Therefore there is no means of isolating these chambers under normal conditions and every microbic invasion in one necessarily affects all. The result is that otitis media acuta is essentially formed by the association of an antritis and a tympanitis; when there is pus in the anterior chamber, it is also found in the posterior. From an anatomico-pathologic standpoint, there is no otitis acuta without mastoiditis, and if all the mastoids of those suffering from acuta otitis media were trephined, pus would always be found. This happens to some surgeons; they praise themselves but sometimes they are wrong. For clinically it acts otherwise. Whenever the suppuration is discharged easily into the tympanum by way of the aditus there is no clinical mastoid reaction; and the experience of each day teaches that an early opening of the drum in the great majority of cases is sufficient to drain the mastoid. Likewise it often happens that an opportune paracentesis will abort a mastoiditis of great menace which has already been manifested by external disquieting signs. We know then that in all cases of acute generalized otitis media, the mastoid suppurates; we should keep these cases always under surveillance but not always open them.

Nevertheless it is well to add a corrective to this formula. In slightly virulent acute otitis media, the lesion, accentuated especially in the tympanum, is less in the antrum. The inflammatory process is less and less marked as it is distant from the tube, which brought it to the ear. The mastoid in this case only presents an intense congestion with tumefaction of the mucosa which covers the walls of the cavities. There are in addition forms of mastoiditis in which there is

more serous discharge than pus, which are capable of cure by resolution without surgical intervention (Moure).

2. The middle ear from a philogenetic standpoint is only a diverticulum of the superior respiratory tract, a prolongation which is interposed between the anditory network and the skin which protects it. An acute otitis media, therefore, is an affection of the respiratory tract; besides we know with what facility and constancy these infections are diffused throughout the system; it is not astonishing, therefore, that otitis media, an affection of the otic portion of the respiratory mucosa should be accompanied by a salpingitis, a pharyngitis, rhinitis and epipharyngitis. Not that there is an assembly of distinct affections, but rather the simple diffusion of the infection to the entire naso-tubo-tympanic system so united.

The contrary could not be understood. We see then that it is an error to restrict the treatment to a specially individual one, to that by way of the auditory canal, an error daily committed. The disease is general, the therapy should be general.

More than this—not only is the diseased ear a part of the upper respiratory tract, but it is also, we should not forget, a part of an organism. There are three indications for the treatment of acute otitis media:

1. To treat the ear.
2. To treat the nose, pharynx and epipharynx.
3. To treat the general condition.

1. TREATMENT OF THE EAR.

The local treatment of acute otitis media may be stated as follows:

Two indications. Seek to prevent (1) The immediate accidents resulting from the exudate; means to employ, evacution, drainage, imitating nature in this. (2) Remote incidents of chronicity, resulting especially from secondary infections; means to employ, antisepsis or (better) strict asepsis, sterilization of the field of operation, instruments and dressings, imitating the surgeon in this.

We should be radical upon the second point; No concession is possible. The neatness of the aurist does not suffer by discussion. Only, let us remember that the middle ear has two entrances, two ducts, the canal and the tube giving access to the tympanum. These constitute a cavity like the

letter Y. Precaution observed at the tympanic entrance will be of no avail if the tubal entrance is neglected—what we wish to say is that we should not forget to treat the ear and the epipharynx at the same time.

Upon the first point, however, there is occasion to be opportunistic. The utility of an artificial evacuation can and should be discussed. For it is not everywhere that paracentesis is systematically rejected, with the school of Prague, or practiced invariably, as taught by the school of Munich; otology is not yet an exact science. We will then insist upon these questions: When is it advisable to evacuate the exudate artificially? How should this evacuation be made? How should drainage be assured?

The pivot about which our conduct in the treatment of otitis media acuta revolves is the consideration as to the time when we are summoned to take charge of the case. Very different will be our manner of treatment according to whether or not we intervene before spontaneous perforation of the drum, and very different also will be the efficacy of our intervention in the two cases. We are called upon to consider the following: *before,* we are still masters of the situation; we may by an active and energetic treatment arrest the affection in its course, sometimes even abort it; *after,* we can only submit to the course of events. We must accede to these things without pretending to provoke an arrest, still less a regression; we content ourselves with watching the flows of pus, with draining it in order to make it inoffensive. How much greater advantage it is for the ear which we treat at the proper time, in the beginning of the disease than later when the discharge is established. So therefore the treatment of the preperforative phase and that of the post-perforative phase is absolutely different.

Preperforative Phase. The tympanum has not spontaneously perforated. Pain is the dominant symptom, the primary indication is to calm it. How can this sedative be obtained? By various procedures, dependent upon the cause. This may be due to a simple inflammation hyperemia or to the presence of an exudate with pressure. If the last is constant it is always necessary to incise the tympanic membrane so as to kill two birds with one stone: in order to relieve the tension in the tympanum and to prevent the complications which may result from the burrowing of pus or from its continued sojourn in the ear.

But otitis does not always present this condition of things. Very often there is only a predominant hyperemia and opening the tympanum is then entirely useless.

In resume, the problem to solve before all when we are called upon to treat an acute otitis is the following: is there or not an indication for performing paracentesis of the tympanic membrane. Certain otologists solve the question in a very simple manner. "Incise the tympanic membrane by all means. A paracentesis correctly and properly made is harmless. The worst that can happen is that it was unnecessary."

This argument for uniform surgery is deficient from one standpoint, that it is extremely difficult under ordinary conditions to make a paracentesis absolutely aseptic; besides even with an irreproachable sterile needle we risk the aggravation of an otitis which has ceased to suppurate. Surgeons are guarded about incisions in acute lymphangitis. We are to be careful of an excess of zeal to evacuate the tympanum as a reaction against the abstention of former times. Against the practice of the old aurists who permitted the tympanic abscess to "ripen and break" by poulticing the canal, we are to-day inclined to incise the tympanic membrane too lightly and too often. A little moderation in this regard will suggest a better policy. We are always more likely to err by excess than by omission. There are then two cases to be considered, those in which paracentesis should not be performed and those in which it should be.

1. Cases in which there is no indication for paracentesis of the tympanic membrane. When pain in the ear is not continuous, when the acuity of the diseased ear is not notably lessened, when the fever is slight, when cerebral reactions are absent, paracentesis of the tympanic membrane is not necessary even when it is red and tense. Later on we shall specify what are the conditions which require incision of the membrane; it is sufficient now to discuss the opposite. Let us then see what should and what should not be done.

(a) The middle ear may be acted upon, through the auditory canal in an immediate manner, and mediately through the periauricular region. On the one hand the canal may be filled several times a day with warm carbolized glycerine which has the double power of calming the pain and of disinfecting the external ear preparatory to future intervention. Without doubt carbolic acid has an abortive action on nonspecific inflammations, for instance, its action on lymphan-

gitis. Carbolic acid is, it is true, very irritant, but glycerine has the property of reducing its caustic action without modifyng its qualities, so that the glycerole which many physicians, a *priori* fear to use is well supported by the skin of the canal and tympanic membrane provided that the glycerine is strictly neutral and the carbolic acid absolutely pure. A dilution of one to twenty or one to ten is sufficient for an adult and one to forty is preferable for a child. Applications of Bonain's liquid acts very well as a resolvent in a dry canal.

On the other hand application may be made over the whole periauricular region, of gauze compresses dipped in boiled water as hot as possible and by a bandage. This is renewed as soon as it becomes cool.

(b) On the contrary, the canal should not be made unclean, the drum injured or the tympanum infected. Therefore we should use no laudanum, no soothing balsams, no oil of sweet almonds in the auditory canal; no injections of boric acid, which, by striking the drum, opposes the general law that every diseased organ should be kept at rest. And we should not use air douches through the nose, which agitate the tympanum and its articulations and in addition force in germs from the epipharynx which perhaps could not penetrate of themselves.

In the fortunate cases, and they are numerous, the resolution of the otitis is assisted by the application of this mild treatment, in fact it is accelerated. Under its influence the pain disappears whether it is spontaneous or provoked by pressure over the mastoid and audition is re-established while the speculum shows a drum membrane, becoming pale, which is retracted. The clinical sense teaches one when to discontinue this treatment; the hot applications need only be continued until the pain disappears—they are the first to be withdrawn.

When, on the contrary, these mild therapeutic measures fail, we may then, if we have waited long, proceed as in the following case without delay:

(2) *Cases in which there is an indication for paracentesis of the tympanic membrane.* There are three major indications for paracentesis of the tympanic membrane:

(a) Pain, provided it is continuous, and what is more positive, increasing. Thus attacks of transitory otalgia, such as the nocturnal ear crises of children, if they disappear quickly upon awakening of the child, are not a formal indication for

intervention. They give evidence generally of a congestive attack by spontaneous resolution.

(b) Deafness, provided it is recent and very marked. An ear previously normal, which does not hear low voice at a few centimeters distance is certainly filled with an abundant exudate even if there is no pain. Immediate evacuation is called for in order to prevent ear troubles of lasting duration.

(c) Fever and poor state of the general health, provided they depend upon the ear and not upon the protopathic affection, causing the otitis (grippe etc.) or upon another concommitant affection (bronchopneumonia, tonsillitis).

It is necessary to intervene especially when there are cerebral symptoms which occur so promptly in children.

The local indications furnished by the appearance of the drum while they are certainly useful are only of second rank in importance. However, a bulging drum coincident with the preceding symptoms can only add a new argument to the cause of intervention.

If there is a want of agreement between the local and the general symptoms, the signs furnished by the speculum should not be allowed to supply confidence in this particular. Certainly when pus is seen clearly through a drum ready to rupture, incision should be made at once; but such a picture is rare. Generally the tympanic membrane is not so clear; however, it is not to be forgotten that this membrane when it is simply swollen by a pocket of inflammatory edema may wrongly appear as a tympanum filled with pus under pressure and inversely, a thick sclerosed tympanic membrane may not show externally what lies behind.

The result therefore of these considerations is that every attentive physician called upon to treat an acute otitis, even when entirely unskilled in making an examination of the tympanic membrane can and should understand the indications for paracentesis.

The technique of paracentesis is too classical a matter to figure long in this report.

The instrument of choice is a lance-shaped knife, mounted preferably upon an independent handle. It cannot be too sharp; in this respect it is well to imitate the practice of surgeons who have their bistoury resharpened each time it is used.

The sterilization of the knife is indispensable but delicate. Burning which, in order not to be illusory, must be at red

heat can not be used; sterilization at a dry heat of 170° dulls it; boiling for five minutes in a vessel filled with carbonated water is preferable, but it is still better to keep the knife for ten minutes in a tube of chloroform in which it does not sink and in which it may remain indefinitely provided it has been previously well dried.

Disinfection not only of the canal but also of the vestibule of the ear is an obligatory precaution in order to prevent secondary infection of the tympanum. This, however, is superfluous if the canal has been bathed in carbolized vaseline for several days; indispensable in the other cases in which dirty dressings have been used. The use of soap, washing with water then alcohol may easily be practiced in the canal with the aid of a cotton applicator, finally bathing the ear for ten minutes with a one to one thousand solution of mercury bichlorid and finally thorough drying. Anesthesia of the membrane should always be attempted, though it is not always successful. Nevertheless the pain caused by paracentesis is of such a character that it is absolutely necessary to attempt to prevent it.

Bonain's mixture:—
Crystallized carbolic acid.
Menthol.
Cocain hydrochlorate aa 2.

is the least unsatisfactory of the anesthetics. A small pledget of cotton well saturated with this mixture is easily spread upon the drum which upon contact becomes blanched and insensible.

This anesthetic may be reproached for inconstancy. The fault is often with the physician, who does not know how to use it. The following errors of technique prevent the good effects of the anesthetic without compromising its value: not completely drying out the canal in advance, neglecting to free the drum from the epithelial mass which covers the drum, not waiting a sufficiently long time, about ten minutes, introducing the knife beyond the limits of the anesthetized zone, striking the nerve plexus of the promontory. This anesthetic has been blamed for producing a scar which after contraction, leaves a destruction of the tympanum, extensive and often durable. This inconvenience is caused by a badly prepared mixture in the manufacture of which a trace of alcohol has been permitted to enter. It is often of advantage to have a large perforation which is slow in closing. It is the best assurance

against a mastoid operation. It is evident that in unmanageable children and in nervous adults, the local anesthesia is as painful as the paracentesis itself. In these cases general anesthesia is imposed. A little bromid of ethyl or a few whiffs of somnoform (Moure) are sufficient to secure anesthesia for the few moments required. In an extreme case chloroform may be given, but this is making the operation one of great importance. Theoretically the incision should be made in that region of the drum which is always dependent whether the patient be standing or lying down; that is to say in the postero-inferior quadrant or the antero-inferior quadrant (Moure).

Practically it is often made in the part of the drum which is bulging. It is important not to make a timid perforation, too short or too slightly penetrating. Depending upon the case or upon personal preference a linear or crucial incision may be made; or also, in order to aid the orifice in remaining open, a crescent shaped valve may be made looking below and behind.

Having performed paracentesis one or two Valsalva inflations should be made for the purpose of verification, or in extreme case, a Politzer in order to determine by the sounds of the air and blood in the canal whether or not the incision is sufficient. But the maneuvers of aerations should be limited to this. The blood is stanched with cotton applicators. A piece of sterilized gauze of fine mesh should be loosely applied throughout the length of the canal for drainage purposes without obstructing it and the meatus is filled up with hydrophile cotton. A cotton compress should cover the auricle and its surroundings, sufficiently thick, as to prevent the pus passing through it, with several turns of a bandage, fix the dressings around the head. Let us forget for a moment that we are aurists and let us consider ourselves surgeons opening an abscess.

The question of the after treatment of an ear upon which a paracentesis has been performed is the point which divides otologists. And yet nothing is more elementary than to apply to the ear those grand rules of modern, general surgery, drainage and asepsis. One can hardly comprehend that this should be a matter of discussion.

As an abscess is evacuated when it is well opened, so the middle ear should be emptied of pus without being constrained or aided by artificial means, which is the case when the paracentesis is properly made. It should be the incision of a surgeon

and not the mere puncture of a general practitioner. However, when the incision is once made, there is only one more thing to do; to provide for drainage of the pus down from the tympanic orifice but to provide for it in a proper way. However, such attention can not be confided to the patient or his family. Those who, after the incision is made prescribe instillations, douches and frequent injections, which by reason of the repetition can only be given by unclean hands, are responsible for much damage to the tympanum for it is repeatedly infected and thus by reason of their treatment they prolong the discharge until it becomes chronic. Is it to be supposed that a surgeon after having incised a phlegmon, would permit the husband or maid to introduce every two or three hours into the abscess cavity divers fluids differing chemically, but invariably septic?

It would be better to make the dressings less often than to have the dressings dirty. On the other hand the less one touches the wound the more rapidly it will be cured; the less one disturbs an ear upon which paracentesis has been made, the quicker it will become dry.

A single dressing of the ear per day amply suffices discharge, but the dressing should only be made by a competent physician that is to say one skilled in asepsis and accustomed to use the otoscope. There must be absolute interdiction against any one else dealing with the operated ear or the dressing materials. The same respect should be bestowed upon incised tympanic membrane as upon an abdomen upon which section has been made.

The technique of the daily dressing should be regulated as follows:

(a) Remove the external dressings; irrigate the concha and the periauricular region; examine the mastoid with the finger and the eye; investigate carefully the slightest retroauricular swelling comparing the two ears, looking at the patient from behind; finally make slight pressure upon the three classic portions of the mastoid, the apex, base and posterior border.

(b) Remove with a pair of forceps the gauze which drains the canal and consider the odor, color, consistency and abundance of the secretions which it has taken up.

(c) Wipe off gently but carefully the walls of the external auditory canal, keeping it under control in full sight, using an applicator which has been properly sterilized and prepared; note if there is an otitis externa and above all find

out if there is a tendency to a depression of the postero-superior wall.

(d) Examine attentively the drum and its perforation in order to determine the degree of retention in the tympanum, according to the quantity of pus which drains spontaneously through the opening, some time after it has been cleaned—a capital sign, often neglected.

(e) Introduce with proper forceps (without teeth—in every case, not those which were used to remove the soiled dressings) a piece of aseptic gauze as long but not so wide as the canal, which should not be pressed in as a tampon, but on the contrary spread out from the perforation to the concha.

(f) Place a tampon of hydrophile gauze in the concha and over the whole region a compress of cotton thick enough to prevent the pus from passing through.

(g) Retain the dressings with a bandage tightly adjusted to the head or some other method of bandaging may be preferred. However, avoid bandage of black silk which as they cannot be washed each day may prove a source of infection.

Is it necessary to say that before beginning the dressings the hands should be washed and the vessels should be sterilized with a flame, likewise the instruments, especially those which have not been previously sterilized with dry heat.

In this way, the dressings of to-day are made proper for the suppurating cavity.

Various objections are made to this new mode of dressing by an otitic tradition which is offended at its novelty.

Here is what is said:

(A) Why put a piece of gauze in the canal? The osteo-cartilaginous canal, always wide open in an excellent natural drain which empties the tympanum. Gauze is useless, perhaps harmful, because it tends to obstruct the passageway. Is it not said that the drain drains and the gauze tampons?

Certainly if the gauze wick is too large or if it is badly introduced, it acts as a stopper, but the fault is entirely in the dresser, no more and no less than if he desired in a wound a drain which was too short or impervious. However, let us not confound gauze wick with tampon. A wick—a lamp wick if you wish, is according to definition, a conductor which draws up a liquid in a reservoir and conveys it up to dry portion. This same wick correctly placed in the ear draws up the pus as soon as it passes out of the tympanum and directs it towards the mass of absorbant cotton which retains it. Without the

wick the pus can only be carried passively from the tympanum, it accumulates in the canal the walls of which it covers and only arrives at the concha when propelled by the *vis a tergo*. With the wick the pus passes out of the tympanum actively, pumped out almost as soon as formed. It is not arrested in the canal but is immediately drawn by capillarity towards the absorbant cotton. And not only does the wick prevent the flow of pus from stagnating in the canal but it creates a current of centrifugal exosmosis (experiment of Preobajensky) which opposes as long as it lasts the centripetal microbic invasion coming from the exterior.

(B) Why not make injections into the canal? Let us answer that these injections, which ordinarily complicate the technique greatly, are susceptible to three objections.

(1) They are useless. The wick well placed in the canal ought to drain all the pus from behind and the applicator in the direct examination assures the cleansing of the external ear in a manner most instructive for prognosis.

(2) They are infective. We do not conceal the fact that it is almost impossible in the city to make a douche extemporaneously truly aseptic; the water is rarely sterile, the receptacles are doubtful and the syringe easily contaminated.

(3) They are irritating. They injure the tympanum causing sometimes pain and vertigo and all this without much profit because they cannot clean the diseased cavity as they are forcibly arrested at its threshold. Besides modern surgeons do not any longer wash wounds, nor irrigate well-opened abscesses, and gynecologists are abandoning profuse injections in patients which they may look after themselves. However, when the discharge is very abundant and when the patient is not directly under observation, ear douches may assist so we cannot condemn douches absolutely. (Moure).

(C) Why not use air douches at each dressing? Is it because politzerization is to be blamed for provoking artificial mastoiditis by projecting into the mastoid cavity pus coming from the tympanum? But it is known that this blame does not hold because it is demonstrated that there is not otitis without antritis. The air bulb cannot create what already exists. All this is very true but there are other reasons for opposing the regular use of the air douche in the course of the dressings of otitis acuta. The air douche is evidently injurious; injurious, because it gives severe shocks to a region which should be at rest; injurious because it forces brutally towards

the diseased ear the septic secretions which are seldom absent from the epipharynx; harmful perhaps by risking contamination of the sound ear, although this point has been sharply contested. And besides it is of no utility, for one of two things occurs. Either the tympanum is well emptied and air inflation is not altogether necessary or it is not well emptied because the tympanic perforation is not large enough. In this case, paracentesis not politzerization is necessary.

But the air douche should not absolutely be condemned. Sometimes its relieves the head in certain patients; it may be authorized in exceptional cases when the acute period subsides. (Moure).

(D) Why should not antiseptic substances be placed in the canal? Have carbolized glycerine and sublimated glycerine lost their bactericidal property?

We claim that these drugs are altogether useless because they do not penetrate to the seat of disease and do not enter the tympanum; and furthermore, if they do enter, they are immediately destroyed by the pus which fills it.

But there is a more serious accusation to formulate against these substances. They favor otitis externa, which causes the patient prolonged suffering and renders the dressings very painful, not counting that it interferes with the proper drainage of the pus. How then is this complication caused by their influence? Very easily in the following way: So long as the epidermis of the canal remains intact, it endures without reaction the pus coming from the tympanum. There is applied a strong antiseptic agent which causes a slight necrosis of some of its epithelium and lays the dermis bare in certain points where inoculation takes place, and thus is created a pyodermitis, which is rapidly diffused over the whole canal.

It will, we hope, be conceded that the comparison of the modern treatment of acute otitis with the old practice (antiseptic douches, injections, inflations) is of advantage to the former. Impartial observation of a series of facts oblige us to give it preference from three points of view:

(1) Because it is much more convenient for the physician.

(2) Because it is much less painful for the patient.

(3) Because it notably shortens the duration of the otitis, particularly for the reason that it does not prolong it.

We cannot repeat too often, for it is not well enough known, that when the tympanic membrane is perforated the impor-

tance of the aurist, very great up to this point, is suddenly restricted. Before, we directed the results, now, they in their turn lead us. So in spite of the best treatment applied, the otitis may go on according to circumstances to a good or bad evolution.

(A) *Favorable Evolution.* This is characterized by the fact that the wonderful relief which succeeded the paracentesis continues to the end of the disease and it is due to the perforation being maintained sufficiently open during the whole time that it is necessary.

Generally in spite of the painful symptoms ceasing almost immediately the suppuration persists in the same degree for some time, then it lessens and stops about the second or third week. This is produced or announced by the cure of the epipharyngeal catarrh which beginning some days before the otitis, ends sooner—an excellent omen when despairing on account of the tenacity of the discharge. All the more reason, is it not, to care for the epipharynx?

The speculum teaches us that this cure may follow two different otoscopic methods:

(a) In the first series of cases (the light form) the cure takes place from the depth towards the surface. The tympanum is already dry when the tympanic perforation is still wide open. It is sufficient to insufflate into the bottom of the canal a little boric acid powder and to leave the tympanic membrane close slowly under this protecting cover—dry dressing renewed every two or three days. However, the first dressing must never be left longer than twenty-four hours in order to watch the effect. As nothing is to be feared a strict surveillance is not necessary.

(b) In a second series of cases (rapid form) the cicatrization of the tympanum is very rapid, while the middle ear still suppurates. There is, however, no pain and the deafness diminishes, the unobstructed tube evidently suffices for drainage. However, this mode of cure ought to give us and in such patients a close observation should be instituted; their mastoid should not be lost to view. It is in these cases that delayed mastoiditis breaks out several weeks or months after the disappearance of the discharge.

(B) *Unfavorable Evolution.* This is the case, when in spite of the paracentesis the relief sought for is not obtained, The perforation is insufficient to assure the necessary drainage, or the orifice is too small or closes too soon. The classi-

cal signs indicating paracentesis reappear; it is necessary to begin all over again, but this time we must be radical; the incision must be very large and positive. Is it necessary to make a paracentesis in these cases of unfavorable evolution, where the pain diminishes but litttle or the drainage is poor? It will be wrong to insist upon this intervention which under certain circumstances may do no good.

If it is true that a primary paracentesis amply and properly done is often sufficient to assure drainage of the pus throughout the duration of a benign otitis, it is not at all uncommon, especially in the young in whose tissues the reparative process is strong, to call for a second operation, but rarely more than this. For, if the retention persists in spite of this, it signifies a more prolonged attack. By insisting on paracentesis of the drum, useful time is lost that should give way to paracentesis of the antrum; to trepanation of the mastoid.

Post Perforative Phase. *The drum perforates spontaneously.*

We have been called too late. This is regretable. We must put this question to ourselves: *"Is the spontaneous perforation sufficient or not to drain the middle ear?"*

(1) The signs that it is *sufficient* deal first of all with the general state. Absence of fever, cessation of malaise, the local condition, the permanent disappearance of the otalgia all indicate that the drainage is good. Local examination is of great aid in corroborating these good symptoms. If the canal has been cleansed, and the drum has been wiped with cotton and then the pus does not reappear through the perforation during the treatment, there is no serious retention in the cavities of the middle ear except in cases of distant inflamed cells; these however, betray themselves by their limited zone of pain. Nevertheless, however, favorable, the local signs are difficult to interpret in the young whose drum, very oblique, red and always swollen, seems to be confounded with the superior part of the canal, pushing the perforation into an unexplorable pretympanic sinus.

(2) The signs of an *insufficient perforation,* are simply the opposite of the above.

Naturally our conduct in the two cases is different. There is no need to demonstrate that.

If the spontaneous perforation is sufficient, and everything is getting along alright, it is sufficient to treat the ear exactly as after a usual paracentesis.

If it is insufficient, it should at once be enlarged with a knife, or, if necessary, a curette is used to remove the endotympanic mass which acts as a plug.

We now have our otitis media acuta cured. The discharge has ceased. The drum has taken on its former appearance. Our efforts are not thereby checked. We must still overlook the return of audition, the disappearance of the subjective noises, and sometimes even give aid by artificial means, air douches, massage of the drum. But let us refrain from an impatience which will cost the patient dear; let us be wise enough to wait to see if nature is not sufficient for this reparative process: *for a too hasty mobilization of the middle ear is able to relight a badly extinguished process and to start again the otitis.*

Two or three weeks' expectative treatment are a minimal requirement.

It is still necessary to suppress the cause of the otitis, to re-establish nasal respiration, to remove large tonsils, especially to cleanse the *cavities full of vegetations,* all of which must be done at the proper time, gently, conveniently and avoiding everything acute which can mar the success. Thus we take part in the favorable statisics of those surgeons who are wise enough to operate *in the cold.*

VARIATIONS IN THE TREATMENT CAUSED BY PECULIARITIES OF CERTAIN OTITIDES.

The type of otitis media acuta which we have described is that of the normal otitis of adults. Now, age modifies the course of this affection and compells us to modify our tactics. *Infantile Otitis* especially deserves our attention. When it is not engrafted on a grip or scarlatina, which greatly magnifies it, it is one of the little incidents of childish health, characterized by nightly aural disturbances, which cause the mother little worry because all children are subject to them, and by transient discharge, with which the doctor does not concern himself, believing it is due to an otitis externa. And as these little crises of the ear seem short and inoffensive, no importance is attached to them.

Well, they are very grave, these little otitides of the little ones, for they usually return and each time push the ear a step along the declivity that leads to the abyss of deafness, without the possibility of remounting.

Therefore they must be treated actively. But, though the symptom is in the ear, the disease is elsewhere. Let us not

lose our time in paracentesing the drum, which will perforate of itself, or in draining the middle ear, which knows how to spontaneously empty itself in a few hours. From the canal, let us do only what is absolutely necessary. Let us direct all our efforts towards the throat, especially the naso-pharynx. Let us as carefully as possible remove the adenoids. It makes little difference that they are barely perceived by the mirror, for the most dangerous for the ears are those which are diffused over the extent of the cavity, or are hidden behind the tube. They do not obstruct, perhaps, but they are certainly infectious and should disappear. Let us not forget that we are more often able to prevent than cure deafness.

Cases of Senile Otitis have in reserve many disagreeable surprises for those who do not know them well. They, like senile pneumonias, are pregnant with dangers, but meager in symptoms. The ear of the old is unable to react intensely. It gives few apparent manifestations, almost no pain, a larval fever, and a drum sometimes scarcely reddened. But behind this mask of aural indifference there is hidden a suppuration which spreads in time and space, which invades the entire extent of the mastoid, by virtue of the vast senile pneumaticity, which become chronic with an alarming facility.

An energetic treatment, instituted at the proper time, is the only means of preventing its evolution. In the old patient affected with or suspected of having an otitis, we make the paracentesis rapidly, systematically and of large size.

It would be to prolong beyond measure our report, if we were to mention in detail the various types of otitis on which congenital or acquired anatomical peculiarities of the middle ear press a special seal, such as *encysted otitis,* an otitis limited to tympanal recesses, which is very frequent in the course of grippe. They are the abscesses which bulge out the posterior superior quadrant of the drum, and demanding an early paracentesis, without which, on account of their position, they have a tendency to empty themselves by way of the aditus. Then there is the *otitis of artero-sclerosis* which developes in certain arterio-sclerotics behind a thickened drum, always treacherous, for the membrane refuses to be perforated by the pus, which it stops by an unbreakable aponeurosis, while the atrophic mucosa of middle ear and antrum does not cause sufficient pain to justify paracentesis; at least if these pains exist, they take the neuralgic form, which deceives the doctor. So then, without pain annoying the patient, without the dis-

tinct tympanic picture, as in the classic forms, capable of warning the physician, the otitis is revealed only by encephalic explosion. Therefore, at the least doubt, incise the tympanum, crucially or valvularly; for the rigid membrane prevents the lips of the wound from separating and they immediately close again, so that an opening is maintained only if there is a true hole. The galvano-cautery is here to be preferred to the knife for paracentesis. (Moure.)

This form is rare, but that is no reason for the aurist to be indifferent to it, for when he meets it for the first time, he will be astonished, and will be lucky if he has not cause for sorrow.

II. TREATMENT OF THE NOSE AND PHARYNX.

Before, during and especially after acute otitis media, the tubal entrance to the middle ear should be protected from infection, even more than the tympanic. The naso-pharyngeal treatment certainly acts more as a prophylaxis than as a cure of the otitis. Nevertheless we often see suppurations of the ear stop from the time that the nose and naso-pharynx are cleansed, and infants who seem to have a discharge from the ears are frequently simply "blowing their noses" through the auditory meatus.

Therefore, during the otitis, precautions should be taken to prevent ascending tubal infections. (a) Above all, compel the patient to blow his nose correctly, alternately through each nostril. (b) Assure relative asepsis of the nose, by snuffing up several times a day, boric-cocain vaseline (Moure); better still, by injecting into the child's nose, with a Marfon's syringe, some sterilized mentholated olive oil, or by prescribing to adults frequent nasal inhalations of menthol-water by means of an appropriate spray. (Lermoyez). (c) Maintain health of the mouth by frequent cleansing, preferably by gargling with salt solutions.

Later, much later, *in the cold,* prophylatic operations, spoken of above, should be performed on the nasal and pharyngeal regions. In rare cases it may be necessary to perform adenectomy during the otitis, in order to cut short a discharge kept up by the cavum. Nevertheless, one cannot be too careful in this respect, so great is the risk of complication, hemorrhage and mixed infection following an intervention made *in the heat* on a cavum full of pus, and in a bad phagocytitic condition.

III. GENERAL TREATMENT.

Whoever has an acute otitis, however small its virulence, should cease from his daily occupation and undergo severe hygiene. Every febrile inflammation of the air passages, acute otitis or bronchitis, demands rest at home, at least during the first few days. Among the poor, the difference in the prognosis for those who are put in the hospital and those who attend the policlinic is truly striking.

If the child has fever, it should be kept in bed, with batting wrapped around its legs. For cold of the ear, there should be done what is done for colds of the lung. Naturally these hygienic measures, more rigorous in winter, should be modified according to circumstances. The first day that the patient leaves the house should be a pleasant one.

Relative diet, movement of bowels, pleasant surroundings are routine prescriptions, but useful.

In the second place, the protopathic disease, during whose course the otitis appeared, should be treated; so quinin should be given for grip, etc.

In the third place, it is sometimes good to prescribe soothing medicines, which give repose to the patient at night, antipyrin and especially chloral are advised; but not opium, which congests the head and causes a recrudescence of the pains on awakening. This must be done without interfering with the local treatment, which alone gives the true relief.

Finally, certain cases of acute otitis are contagious (Lermoyez). It is best to isolate them in a relative manner, as is done in families where several children are afflicted with measles and one of them in addition is attacked by a broncho-pneumonia or a secondary otitis, affections transmissible in themselves.

INDICATIONS FOR MASTOID TREPANATION.

It is well known that there is no otitis media without involvment of the antrum. The almost constancy of this pathologico-anatomic fact leads to an ideal and theoretical treatment of suppuration of the middle ear, based on systematic antrotomy. There is no question that if a large and direct drainage of the mastoid is established, complications will be prevented and audition will be better conserved. This is what is done by many surgeons, who from lack of knowing how to study a drum, trephine because they are unable to do paracentesis; a thing

which at any rate, is less dangerous than the expectant medical treatment.

But let us admit that this would be a great exaggeration. Clinical experience shows us that a resolute aseptic, local treatment, a timely and sufficient paracentesis of the drum, will usually suffice to cure the antritis, by providing its drainage by way of the aditus and middle ear. Furthermore, daily facts show that cures are obtained thus more rapidly than can be obtained by a fortunate antrotomy.

Systematic trepanation, inspired by the constancy of the antritis, should give place to conditional trepanation, demanded by a clinical mastoiditis. Furthermore, mastoid involvments are almost always due to a *cellular* retention, not an antral one, an inflammation of the cells, which is situated in different regions of the temporal bone, often aberrant, and which is manifested often by very different symptoms, according to its location, and especially the construction of the temporal bone.

Therefore, when one or two large paracenteses of the drum have been insufficient to cause the disquieting symptoms to disappear; if constant and spontaneous pains persist in the region of the mastoid; if the base (antral region) the superior border, or the tip of the apophysis retains, in spite of everything, an intense sensibility to pressure, above all, if there is a retro-auricular or retro-mastoidal swelling; if the pus reappears in the field of the speculum in great abundance, after wiping the perforation, or appears in successive abundant discharges preceded by pain, if the brain reacts, if the labyrinth protests, it is necessary to complete the myringotomy with an antrotomy.

It is right, if the symptoms are not pressing, to attempt abortive medication of the mastoiditis (1) by creating a larger tympanic orifice; (2) by applying ice continually to the mastoid apophysis (Lermoyez); (3) by frequent warm lavages of the middle ear by the tube (?) But such a treatment, certainly more dangerous than intervention—because time is lost—should not be continued longer than two to three days; at the end of this delay, if the amelioration has not appeared, it is necessary to trephine the mastoid at once.

And this trepanation should be nothing less than economic. It is necessary to search for the antrum and always open it, and not to confine oneself to that, but also to remove the cortex of the apophysis in order to be able to empty its cells, however aberrant. The more radical the operator, the better for the patient. We cannot approve of the parsimonious opera-

tions, the partial trepanations limited to the cells and which respect the antrum; the risk run is truly too geat.

From these facts, which we all have observed, and from the trepanations of the mastoid which we have done, results this axiom, that during an intervention, *the lesions are always found more extensive than was supposed.* For let us not forget that while we are watching the external cortex, there is hatching unknown to us, at the internal cortex, more constant and more severe destruction. At the most, we see only the external wall of the mastoid, behind which are occurring things never dreamed by us.

But who of us has ever repented of having opened the mastoid too extensively or too soon?

FRENCH SOCIETY OF LARYNGOLOGY, MEETING MAY, 1904.

By Lermoyez, Lubet-Barbon and Moure.*

The Treatment of Otitis Media Acuta.

Luc.—Gentlemen, I have read, with great interest, the report on acute otitis signed by three of the best names of our society, three names which are unanimously considered to be synonymous with great clinical judgment and large experience in aural surgery. I am glad to say to the three eminent authors of this work, that I agree with the majority of the opinions expressed by them in their work. I agree especially with their conception of the phenomena commonly called mastoiditis, which I, as they, think deserves rather the designation of mastoid retenion, since the mastoid antrum could not fail to partake of the suppurative process arising in the middle ear, of which it is the direct posterior prolongation.

I find furthermore that our colleagues have designated, in a manner excelled by none the indications and contra-indications of paracentesis in acute otitis, condemning equally the abuse and systematic rejection of this little operation.

On these different points, and also on the indications for operating on the mastoid process, I agree absolutely with the opinions of my three colleagues.

On other points, I confess, that I disagree. Our colleagues appear to have a high opinion of the importance and efficacy of our treatment on the progress of acute otitis media. According to them, acute otitides may be divided into two groups, on the standpoint of the prognosis, those which have well treated, of course by otologists, and those which have been treated by the layety or not at all.

The first get well quickly and completely, as a rule, and leave the patient with neither objective nor subjective trace of their presence. The others, however, always have the present menace of intra-cranial complications, and the future menace of a long course and a diminution in hearing.

But when we have made this paracentesis whose alleviating and salutary action I recognize fully as well as my colleagues, and which I like, they make as large as possible,

*See page 648.

what means have we at hand to manage and to direct in the most favorable way, the further course of the disease? Our colleagues express themselves very clearly since they object to lavage and air douche and confine themselves to the daily introduction of a piece of aseptic gauze to the depths of the meatus. They believe that thanks to the hydrophilic action of the gauze they are able to drain the suppurating middle ear in a manner that best conforms to the principles of surgery.

Now, gentlemen, I think that is a pure illusion.

Understand me; no one is better convinced than I of the wonderful efficiency of hydrophilic tampons in chronic otorheas where a great destruction of the tympanic membrane renders possible the entrance of the piece of gauze to the bottom of the cavity, that is to say to contact with the suppurating osseous surfaces, providing of course that the antrum is not affected. But I cannot oppose too strongly the identification of the latter conditions with those which we find in the case of acute otitis media suppurativa.

My colleagues are entirely right in recommending and making a paracentesis of the drum as large as possible, but you will have to make it very large, the very largest possible, allowing for shrinkage, something that never fails or is even delayed, and it will still be too small for the extent of the cavity to be drained, and the drain will be stopped at its margin, intead of entering to the suppurating foci, as it should do in order to be a proper drain.

This is my opinion. When there is an acute abscess of the ear, and a large incision has been made in the drum, our effect upon the further progress of the suppuration is absolutely nil, and our role is confined to watching for complications, against which we may employ our most brilliant surgical talents. In short, when we have a suppurating ear, we cannot see its behavior, and have almost no effect, through the perforation, on the suppurating focus.

We drain nothing, and we disinfect nothing for the excellent reason that we have no access to the focus itself. But see how the situation changes when signs of mastoid retention authorize us to make a large opening into the antrum and by this artificial path to disinfect the suppurating focus and to drain it from the bottom. At once the suppuration ceases as if by enchantment. It is that which made me say two years ago, that the most beneficial thing that could happen to a patient with an acute, profuse suppuration of the ear, destined to last a long

time, would be the appearance of mastoid complications, which would allow the specialist to perform an operation, which alone allows complete disinfection and true drainage of the focus. Since, to-day, thanks to our technique, we obtain in a fortnight the cicatrization of the retro-auricular incision when the antrum has been opened in acute cases, and since local anesthesia is enough for the operation, I claim that in the near future this will be the treatment of predilection in otitis media acuta suppurativa, with a profuse discharge, even in default of signs of mastoid retention.

And now, what are my practical conclusions?

I believe that our colleagues are right to establish a distinction between the cases where we have to treat an otitis before the spontaneous rupture of the tympanum, and those where the drum is already perforated when we are called to the patient. In the first, nothing is more natural than to try to protect the middle ear from the extra-auricular germs which it has till now, escaped. If the drum is incised aseptically, by a skilful hand, and the discharge is small, I will gladly admit that the method of treatment recommended by my colleagues would be the most opportune, and that a loose piece of hydrophile, aseptic gauze introduced daily to the margin of the perforations is the simplest and best method of treatment.

The hydrophile power of the drain is sufficient to draw off the little pus which collects in the middle ear in 24 hours, and it can thus be kept free from all new infection.

But whether or not, the drum opened spontaneously before the specialist come on the scene, do you really believe, gentlemen, that the same method of treatment is applicable to those profuse discharges which in the space of less than an hour impregnate many large pieces of gauze?

I confess that I do not share the feeling of discredit expressed by our colleagues in regard to injections into the meatus. They present three objections.

(1) They are useless, since the drain introduced into the meatus serves to remove the pus. But my answer is, that this is precisely what is not done, as its absorbing power is soon destroyed by the abundance and consistency of the pus.

(2) They are hard to make aseptic, and consequently are usually infectious. I don't see that it is difficult to make people use only boiled water, which is not infectious.

(3) They are irritating and cause cicatrization by the shock which they produce at the margin of the drum. It

seems to me sufficient to overcome these inconveniences by having the lavage made gently. Our colleagues add that nowhere today do the surgeons wash fields of suppuration or irrigate abscesses with good openings. I answer, that here we have an abscess that is insufficiently opened, since we have only the tympanic perforation, which cannot suffice, and which has a tendency to shrink or become obstructed. We have, in short, a very special case in a peculiar region, and our colleagues are wrong to wish to apply the principles of abdominal surgery in their entirety. I find that the injections used without force in the meatus are admirably adapted to the peculiarities and difficulties inherent in the region in question, the liquid injected penetrating the tympanic perforation, which their pieces of gauze cannot pass, as far as the middle ear, thus aiding in keeping the perforation open, and when it has reached the middle ear, mixing with the pus it finds there and making it a fluid more capable of elimination. My personal experience is entirely in accord with the above theoretic considerations.

As I said above, in a case of otitis media acuta with profuse discharge, after I have seen that a piece of gauze will be insufficient to drain the amount of pus produced by the ear in 24 hours, I confide either to the physician in charge or a member of the family of the patient the task of irrigating the ear, by means of a little metal syringe, with warm water, previously boiled, to which a quart of oxygenated water has been added in the proportion of 1 to 12. After each lavage the patient performs the Valsalva method, so as to keep the perforation permeable, and then several drops of carbol-glycerine—1 to 15 or 30—are dropped into the meatus. After this, a piece of gauze, sterilized and cut in advance by the physician, is introduced into the meatus, but not pushed deep into it, and the person making the lavage must renew this whenever the piece is saturated with pus.

My part in this condition is only that of supervision. That is to say, I see the patient every 3 or 4 days, except when the doctor or the person in charge discovers fever or tenderness on pressing the mastoid. The douches are naturally lessened in number according as the discharge decreases in amount, and I announce when the treatment must be modified, for example by substituting for the carbol-glycerin insufflations of powdered boric acid, and when air must be

forced through the Eustachian tubes to remedy insufficiency of audition.

I desire to say, that since I have adopted this method, it does not seem to me that my patients have required more time to be cured, than when I used pieces of hydrophile gauze renewed every 24 hours. I believe that the opposite is true, and I have come to the conclusion that in cases of acute suppurations of the middle ear, with profuse discharge, it is better for the patient to have numerous lavages by non-surgical hands than a daily tampon by a specialist. It is well to see things as they are in reality, and how they consequently appear to the large medical public. When, for example, doctors claim, as they have been accused, that as a rule the acute suppurations of the middle ear get well of themselves, and that we see only the severe forms, they are not so much at fault as you seem to believe. And you will not remove the feeling that to use in every otitis suppurativa acuta the treatment, minutely carried out by the specialists as described by you, is nothing less than an exaggeration.

For you, the complications and sequelae are dependent on the manner in which the otitis has been treated; I believe, on the contrary, that after the paracentesis, whose therapeutic value I appreciate no less than you, the different methods of treatment adopted for an acute otitis has little influence on its course. I use intentionally the word acute, for on the other hand, I consider our action as all-powerful in chronic otorrhea, when we are able to reach the middle ear directly either the meatus through the large defect in the drum, or as a result of an operation, when the lesion has extended to the antrum.

Where, then, is the origin of the special gravity shown in certain acute suppurative otitides, whether at once (meningitis, etc.), or later chronicity, loss of hearing, intracranial complications)?

I think I am in accord with the results of our daily observations when I say that the complications of the first kind (let us call them immediate complications) appear at a time close to the beginning of the disease, after the drum has been opened by us, and the patient has been regularly treated by us according to the most rigorus antisepsis. The treatment adopted should not be held responsible, and their occurrence can be explained only by a virulence and special diffusibility of the infectious matter, or by an anatomic peculiarity, especially exposing the subject either to the passage of the in-

fection into the endocranium, or in the case of Bezold's abscess, to the rupture of the inferior wall of the mastoid.

As to the later sequelae of otitis, it seems from my observations, that it is no less a mistake to ascribe them to the method by which the otitis was treated in its acute stage. If we question our patients who have chronic otorrheas accompanied by extended destruction, not only of the drum but also of the chain of ossicles, and the osseous walls of the middle ear, lesions which result in diminution of hearing, and which expose the patient, by the fact of progressive ulceration of the bony walls, to infection of the lateral sinus of the brain; if we question them, I say, we will almost always find that their otorrhea, which often dates back to their infancy, appeared during the course of one of those general infectious diseases (scarletina, diphtheria, measles, typhoid fever....) which have the sad privilege, from the very beginning, of attacking the auditory apparatus, and of producing there wide spread and irreparable destruction, no matter what energy and ability was used in treating them.

Consequently, here again, an attentive and unprejudiced observation of the part played by us, leads to the conclusion, that the treatment instituted by us could be only impotent.

I cannot deny, that in this debate, I have taken an ungrateful part, my arguments tending to nothing less than to contest the value of our means of action against acute uncomplicated suppurations of the middle ear. But I regarded it my duty to combat what seems to me an illusion, and I once more repeat that I do not believe there is one of us who thinks that we are able to act with any efficacy on a purulent focus, from which we are separated by a membrane pierced by a small hole.

It is, fortunately, consoling to think that if we are condemned, as long as the otitis remains uncomplicated, to the simple observation, we have a brilliant revenge for this powerless and passive role as soon as complications appear, which result from insufficient drainage of the middle ear, since we are authorized to open a passage way directly to it and, are furnished, so to say, with the occasion of becoming its master, and in the future directing efficaciously the evolution of the disease.

VACHER (Orleans)—I do not think that it would always be possible to find among our patients a sufficient understanding in the family of the patient to allow them to be

entrusted with carrying out the douches; therefore I am very careful in the prescription of irrigation.

There is a very interesting point, on which I should be glad to have the opinion of my colleagues. What line of conduct should be followed in cases of otitis acuta which cease to be acute, without becoming chronic? What should be done at the end of 2 to 3 weeks with a discharge which does not cease, and yet in which there are no indications for antrotomy?

This my method of action. With a fine Hartmann's canula and a Pravaz syringe, I inject into the middle ear a solution of sterilized cocain, prepared on the spot. I leave this 5 to 10 minutes, and then irrigate with a large amount of ordinary solution. I repeat the lavage every day or every other day, and usually obtain good results. If this does not suffice, I use picric acid (1-200 or 1-300). Its cornefying power seems to me to exert a favorable action, and I obtain thereby very rapid cures.

MOLINIE divides acute otitides into 3 forms; otitis catarrhalis, otitis suppurativa, otitis with mastoiditis.

There are three factors in determining the gravity of the disease; the receptivity of the subject, the virulence of the pathogenic agent, the anatomic conformation.

The last, considering the mastoid complications, has a considerable importance, for we know, for example, if the cellular system of the mastoid is reduced to a small antrum, there will be no mastoiditis. In the catarrhal form, warm fomentations are advisable; in the suppurative form, paracentesis. After paracentesis, drainage with gauze, as described in the report is theoretically perfect; practically it is insufficient and confining.

We shall not abandon injections, which can be made aseptic, even when used by the family. It is sufficient to have the patient buy a metal douche, which should be boiled each time before irrigating. As to the rational and surgical therapy of otitis media, there is only one, antrotomy. Most of the otitides mediae get well of course, without antrotomy; but there is nevertheless a fixed indication for this operation, viz., when the duration of the discharge has exceeded two months, even without mastoid symptoms.

In conclusion, M. thought that the otitides of tuberculosis and diabetes should be described as special forms.

DUNDAS GRANT found that injections have been condemned too completely by the committee. The cases must be distin-

guished from each other. The dry treatment is used by him in a hospital of children; what was described in the report was the ideal treatment. But the treatment cannot be applied to out-patients, and it is necessary to have recourse to irrigations; and the result is not so deplorable.

HIRSCHFELD recommended the use of sodium sulphate (2%), which has the property of dissolving the albuminoids and which is very good in lavage; on adding to it a solution of mercuric iodide (3%) we have a perfectly handy antiseptic solution. A pupil of Lister, he was a partisan of antisepsis, too much scorned by asepsis.

There is need of antisepsis after a paracentesis. Before it, as Lermoyez says, it is good to make preparatory instillations of carbol-glycerin in the meatus; but it is good, just before the operation, to cleanse the canal with alcohol. He concluded by insisting on the great utility of the paracentesis when indicated. We never regret making it, but sometimes regret terribly not having made it. The indication seems to him more pressing in old people.

Finally, Grant showed a small bottle with an opening to admit a tube, for a nasal douche. The utility of the nasal douche is very great in the treatment of otitis.

CHAVASSE (Paris). I share the belief of the committee in regard to paracentesis; performed at the proper time, it prevents complications, except in grip otitis, nevertheless they do not always develop where it is not performed.

I share, furthermore, the committee's belief as to the treatment following the paracentesis, and I am a partisan of drainage by pieces of gauze. To make this as perfect as possible, I change the piece two or three times a day. I recognize, however, that this treatment, perfect for the hospital, presents inconveniences among our patients. So when I cannot have recourse to it, in order to avoid the irrigations, which are usually badly made and malapropos, I use baths of oxygenated water followed by instillations of 5% carbol-glycerin.

BROCKAERT (Ghent). I do not share the ideas of the Germans and of some of my colleagues who think that antrotomy should be performed in every case of acute otitis media which has resisted rational treatment longer than two months.

In 100 cases of acute otitis taken from a free clinic, that is to say, where the conditions are far from being perfect, I have had only 2 cases of mastoiditis, one of which was cured by ice applications, and the other by trepanation, and among

these 100 cases, 15 were cured only at the end of 3 months or more.

GLAOUE (Bordeaux). The committee are not partisans of tubal douches; for my part, I use them with success. When there is a large opening in the drum, and the mastoid has commenced to react, the lavages are beneficial, being able to remove the pus in the antrum and avert trepanation.

NOQUET (Lille.) I, also, am a partisan of lavage per tubam. Following the example of Delstanche, I make injections of europhenated oil of vaseline. I have adopted europhen in preference to iodoform on account of the disagreeable smell of the latter.

Injections per tubam have given me excellent results at the end of 15 days on an average.

HENNEBERT (Brussels). I have seen Delstanche use injections of iodoform-vaseline oil per tubam from the beginning of the otitis; in the great majority of cases, the acute signs have disappeared, and the inflammation was cured without perforation of the drum.

MAHU (Paris), showed a paracentesis needle. The handle contains a reservoir of chloroform in which the needle is immersed. This method reproduces in a less cumbersome manner the needle-case of Lermoyez, for the conservation and disinfection of paracentesis needles.

CASTEX is a partisan of injection in the treatment of acute otitis. He believes that antiseptic fluids injected into the canal enter the middle ear by capillarity.

LERMOYEZ. In the beginning, I beg all of you, particularly my friend Luc, to forgive me, if, in what I am going to say, my words seem to go faster than my thoughts. But if I was prepared to reply to the different otologic objections which could have been made at the conclusion of our report, I was far from expecting, I assure you, to be compelled to defend before this tribunal, the fundamental principles of general surgery, which, elsewhere, are universally admitted. And while my opponents were speaking, I thought how fortunate it was, in maintaining the good renown of otology in the medical public, that we are in a family circle, and that no indiscreet ear of a surgeon or bacteriologist is able to hear us. It is the value of asepsis, it is the technique of drainage which has been doubted . . . . !!!; truly I am overwhelmed. What! is otology going to stop at the point where it wishes to hold itself apart from the medico-surgical movement, and ignore

its laws! Ah, do not fear that you are going to draw on yourself the pleasant joking with which I have just threatened you. No, it is the disrepute from which it has been so difficult to free the word specialist.

Some one has said that he did understand how a piece of gauze when saturated was able to drain pus; the most primary manual of minor surgery says that; it is not my place to explain it.

Luc likes lavage of the ear; that is a question of taste. Many others also, of whom I am one, have liked them, who afterwards did not. But in our report we have shown, at length, their inconveniences, and it is not necessary to revert to them. where our colleague is laboring under an illusion, and which we truly cannot leave to him, is when he persuades himself that the fluid injected into the meatus penetrates into the middle ear and washes the parts. But what then becomes of the membrane pierced by a small opening, which according to him, puts such a separation between otologic customs and the surgical code.

I know that for many years Luc has cherished a dream, which is dear to him. It is to assist at the triumph of antrotomy as a systematic treatment of otitis media suppurativa acuta. And though he defends himself faintly, nevertheless he seems to me to be conspiring as best he can for the advent of this new regime. In that, he holds faith with himself; for it is not surprising that he should be lead to that conception by the consideration of the acute ototides which he has treated by home-made lavages. Perhaps the strong desire to bring about this antrotomic revolution has made him the advocate of the cause which he has just plead before you with so much eloquence. That is not his desiree did he say? Nevertheless his insistence lends weight to this thought.

As for the rest, the facts speak for themselves, and they assert the superiority of the modern treatment of otitis purulenta acuta. Let us not fall again into the errors of the ancient physicians who preferred discussing to proving. Let us apply in a non-partisan spirit, the rational treatment indicated in our report for a sufficiently long time, and in a few years, when we have our statistics, we will be able to draw serious conclusion. As the matter stands, there is no place for brilliant dissertations, nor room for discussion of facts. Personally, I assert that for 3 years I have abandoned the old treatment of acute otitis whose foundation was air douches

and injection of lukewarm water, and therefore must turn state's evidence, must forswear my old religion, which Luc at this moment follows, and declare that I now cure my patients oftener and quicker, and I am convinced that antrotomy, as a weapon against acute otitis, will become more and more rare.

A couple of words more. In our report, we wished to address ourselves to the general practitioner, whom we hope to reach, as well as to the aurists who hear us.

To the doctors who will accuse us of prolonging the otitis by an excess of local treatment, we desire to state that the abstaining which they propose often leads their patients to deafness and even death, and that we, who treat their ears, save their hearing and their lives. To the aurists we desire to prove that the better in otology is often the enemy of the good, and that the desire to do too much for the sick ear sometimes retards the cure. It is better to do well than too much; and to do well is, as in all surgery of pus, to give large and especially proper drainage.

LUC. I can find nothing more worthy of praise than the efforts of Lermoyez to apply to the ears the great principles of general surgery.

But then, if he wishes to be consistent, there is no other resource, when he has a suppurating ear, than to open the antrum, so as to have a real drainage, that is to say, a perfect drainage of the middle ear. Whenever this operation is not performed, the case of the ear is a special one, and consequently demands special treatment. I demand that you show me a single example in general surgery where the surgeon has to drain a focus, from which he is separated by a membrane pierced by a small opening. As an aid to his theory of drainage by gauze, Lermoyez recalls the experience of draining a bowl of boullion by means of piece of gauze introduced into its contents, but this simile is fundamentally erroneous. In a case of otitis acuta, the gauze stops at the margin of the perforation; then we must consider the consistence of the pus, which instead of being a saline solution, like bouillon, is a thick fluid, carrying solid elements. Since we are talking kitchen, I consider it justice to compare it to a *sauce blanche,* and it is with a saucer full of this fluid that I suggest Lermoyez should renew the experiment with which he has just enlightened us. I will wager that he will not get more than a spoonful.

LERMOYEZ: I am glad to see that at least Luc has accepted

the subordination of the treatment of otitis acuta to the rules of general surgery. Only we do not understand it in the same way. For me, it consists above all in a proper state; for him it seems to center in antrotomy, which he likes so much. Now one is able to be in proper state without necessarily being trepanned.

Nevertheless, I humbly admit that the culinary arguments brought against me finds me with no reply. The brilliant charge of the cook against the surgeon disarms me. In this matter my ability fails me, and I have nothing more to say. What consoles me is that Chassaignac himself, when he discovered drainage of suppurating cavities, was not able to foresee all the benefits to be reaped by the study of *sauce Hollandaise.*

MOURE: Whenever a report is made on questions of therapeutics, the subject must be treated in general, without regard to special cases. So, as Lermoyez has said, the committee have described the surgical treatment of the ear as a chapter of general surgery.

Moure replied to some questions in detail.

Injections per tubam are impossible in children; the otitides of children are more frequent, it is necessary to indicate a treatment applicable to them.

It is especially about the injections by the meatus that the discussers have shown the conclusions of the report. It is evident that one cannot remain always near the patient, that one is obliged to turn the treatment over to unskilled hands, and that then the injections are obligatory, but they are not the ideal method, but a *pis aller.*

When the antrotomy is indicated, it should be made.

Finally, let us remember that whatever the method of treatment may be, the termination of the treatment will depend in part on the ear itself and the cause of disease.

LUBET-BARBON thanked the numerous members who discussed the report and thus had become partial collaborators.

The desire of the report was not to dictate to the specialists their line of conduct. Otitides are numerous, and just as numerous are those which the members of the Society have cured with different techniques, but the report is addressed more to doctors who are not aural specialists. It is a kind of otiatric course of instruction.

We are all in accord on the important points; the conduct before perforation, the urgency of paracentesis when indicated, the necessity for free evacuation of pus after perforation.

When this discharge of pus is established, our technique differs in detail, but that is of little importance.

We are again in accord on the indications for antrotomy, and in ascertaining its urgency when indicated.

To sum up, make the paracentesis when indicated, watch the drainage, look out for indications for antrotomy and perform it as soon as it is indicated.

Transhyoidal Pharyngotomy for a Large Lipoma of the Epiglottis.

GEORGE LAURENS (Paris). From the operative point of view there are two procedures, the subhyoidal path and the transhyoidal path that give access to the middle of the pharynx.

From the standpoint of indications, it is necessary to distinguish two cases.

(1) An operation should be made on the epiglottis and the pre-epiglottal region for the extirpation of a tumor of every limited appearance; fibroma, cysts, lipoma. In such cases the transhyoidal will give an excellent vertical approach.

(2) The intervention is for the purpose of reaching the aerial enclosure—aryepiglottic folds, apex of the arytenoids—or the inferior pharynx. Then subhyoidal pharyngotomy is indicated. The path thus given is horizontal and perfect.

The choice of methods is determined by the region to be operated, and the localization of the tumor.

It was on account of a benign neoplasm in the paraepiglottis that I was called to operate last October.

The patient, Mme. de V., was sent to me by Dr. Chevalier, of Maus, for a tumor of the laryngeal opening.

For several years the patient had difficulty in swallowing. Not much, it is true, but constant. She was treated for pharyngitis and nervousness; sent to numerous thermal resorts; had undergone the most improbable medical treatments, but a laryngoscopic examination had never been made and the affection had finally reacted on the general health. Thin, hopeless, without appetite, pale and yellow, such was the condition presented by the patient at the end of September.

She had been led to consult Dr. Chevalier for two attacks of nocturnal dyspnea, and frequent, recent dysphagia. She was afraid she would die in an attack.

Examination showed dyspnea, the voice was not hoarse but

roughened. It seemed that there was a tonsil or a endo-pharyngeal foreign body.

Palpation of the neck revealed a tumefaction of the subhyoidal region; the outlines of which were difficult to determine, but without the least change in the skin. Complete absence of adenopathy.

With the laryngoscopic mirror I saw a large, rough tumor, lying between the base of the tongue and the pharynx, occupying the entire space between these two organs. No passage for air or food. Impossible to distinguish the slightest trace of the epiglottis or folds; the valleculae were occupied by this huge mass. To the naked eye the tumor was covered by a smooth, regular, thin, whitish-yellow mucosa.

I immediately made the diagnosis of a benign pre-epiglottic tumor, without being certain of its nature; cyst, fibroma or lipoma. I took the standpoint of immediate operation, without making any attempt at extraction through the mouth, and I advised opening of the pharynx, which was accepted.

The operation took place next day at my clinic.

The beginning of the intervention was very dramatic, and but for an alert chloroformer would have been very grave, for I had to stop the anesthetic three times and make artificial respiration.

Three times the patient became cyanotic, pupils dilated, and I had to use all the methods practiced in such cases to resuscitate her.

These terrifying anesthetic circumstances were due to the obliteration of the superior orifice of the larynx by the tumor, and neither projection of the maxilla nor traction on the tongue could furnish a permanent air passage.

I immediately made a tracheotomy, and it was only after an artificial respiration had been sufficiently prolonged that I commenced the operation in all security. I could have done the operation under cocain, but the patient was very much frightened and demanded general anesthesia, and it was hard for me to determine in a state of wakefulness the difficulties that I would encounter in the state of sleep.

Without describing the transhyoidal operation, I will recall the interesting details and their sequelae in this particular case.

The operation was very simple, and after I had cut the mucosa of the pharynx I came upon an enormous lipoma which had attained almost the volume of the fist, which had developed in the vallecular region, pressing the tongue forward and the

epiglottis backward. The pouch adhered to the whole anterior face of the laryngeal operculum and the neighboring region. After I had stripped off its capsule, and enucleated the tumor, I closed the pharynx by several sutures, and joined the two segments of the hyoid bone by a row of periosteal stitches.

The sequelae of the operations included an interesting incident. A secondary necrosis of the hyoid bone which gave considerable secretion, forced me to reopen the wound, and make a hyoidectomy to reach the purulent focus. From that time cicatrization progressed very quickly.

I saw the patient recently, and I was struck by two facts: (1) Complete absence of deformity of the larynx, and of trouble in phonation, in spite of the absence of the bony framework and hyoidal musculature.

(2) The great improvement of the general health, which for ten years had never been right, probably due to a better respiration and oxygenation.

Laryngotomy.—Technical Details.

CASTEX (Paris) showed some points of technique derived from a certain number of laryngotomies for epitheliomata and tuberculosis.

In two cases he tried to avoid using the canula in trachetomy, for he blames it for interfering with the operator by expelling the blood and mucous which are in the tracheal mucous membrane, and of being a source of infection.

He usually performed vertical, median laryngotomy under chloroform and without preliminary tracheotomy. Section of the thyroid cartilage and of the two thyro-hyoids and thyro-cricoid membranes furnishes sufficient access to the larynx.

When the two valves of the thyroids are held by two retractors, it is necessary to wait a moment until the patient clears his throat. Then one proceeds to the ablation of the lesion with the thermo or galvanocautery.

At the time of the operation the head is put in the Rose position, so that the saliva cannot flow over the field of the operator.

Castex avoids denuding the valves of the thyroid with the two-fold purpose of preserving them from fracture during the operation, leaving them doubled, and of utilizing their tissue as an envelope to receive the cat gut which draws together the two halves of the cartilage.

For the first 24 hours only the patient remains in bed without a pillow, so that saliva cannot pass into the larynx.

Castex recognizes that in certain cases the canula is indispensable, or that one may have to use it some hours after the operation, but on comparing the results obtained by him according to the two methods, he finds that it is desirable to do away with the canula in laryngotomies, and that it is feasible.

MOURE is a partisan of preliminary tracheotomy to prevent the entrance of blood into the air passages, and for the greater convenience of the anesthetizer.

Foreign Body in the Nasal Fossae by Explosion of Gun.

TEXIER (Nantes). It was a case of foreign body, unknown to the patient, and which manifested itself only by a suborbital fistula, and a scanty muco-purulent discharge from the nose. The history given by the patient in regard to the suborbital fistula was not clear. It had existed only ten months, and resulted from an abscess of the cheek following a trauma (branch of a tree struck cheek); before this accident nothing wrong with nose.

No previous disease. Left arm amputated, following explosion of a gun. The examination of the patient showed at the orbital border a fistula running from the nose inwards and backwards for 12 cent. Examination of each nasal fossa revealed a blackish appearance in the superior portion. The probe demonstrated the presence of a hard, immovable body; perforation of the septum at this level.

Nothing found by posterior rhinoscopy, frontal sinus healthy; left maxillary sinus a little dark. The case was one of a foreign body bestriding the septum and lying in both of the nasal fossae

Next day we tried, after cocaining, to make it pass from one fossa to the other; it was absolutely impossible to move it in this sense. Transversely, on the contrary, it could be moved. By this manoeuver we found at the edge of the suborbital fistula, a little blood and a dark mass, hard to the probe.

We grasped, not without difficulty, this hard portion, and drew out a foreign body of the length and size of the little finger. On examination this proved to be metallic, crooked mass. It was simply a piece of the barrel of the gun. The accident, two years before, had put it there, and the compound fracture of the arm, which necessitated amputation, had alone received attention. They had paid no attention to the little wound in the cheek, which had bled very little, and rapidly cicatricized.

Investigations on Audition.

CASTEX AND LAJAUNIE reported the results of a new series of investigations which they had made in the field of audition, in an attempt to make a control on those published last year.

For the two voices, loud and whisper, the sense of audition is exactly the same for both right and left ears.

This sense varies greatly even in subjects with normal ears. It seems to be increased in rainy seasons, and in large places. Thus the loud voice heard at 50 meters and whisper at 20 meters in the Bois de Boulogne, are heard at only 30 meters and 15 meters within the four walls of a certain garden in Paris.

It is in the transverse direction, to the right or letf, that one hears the best. Audition is a little better when the voice comes from behind than in front. This small difference, a meter at least, can be explained by the direction of the external auditory canal, which is directed a little backwards. A woman of 50 years, with a bilateral tympano-labyrinthine sclerosis, and very deaf, came lately to Castex's clinic. She was asked to place herself close to the interlocuter, in the attitude most favorable for her to hear. She always placed herself with her back three-fourths turned so that the mouth of the person speaking was facing the posterior border of the mastoid.

The different measurements taken by Castex and Lajaunie have been depicted in an auditory field of the ears. This tracing, for the same person, is composed of two ellipsoidal curves, partially coinciding. The curve is elongated toward the right and the left. It would be interesting to note the changes in the tracing in otosclerotics and hysterics.

The Use of Natural Sulphur Vapors in the Treatment of the Chronic Affections of the Middle Ear.

LAJAUNIE (Aix-les-Thermes) first explained how the sulphur vapors are spontaneously produced, by the hot sulphurated waters, and how they vary in their composition according to the quality of the waters that produce them. But whatever be their origin, all natural gases are complex, so they can be regarded as a mixture of gases.

With this in mind, the author then studied their constituents —chemical composition, thermality, hydrometric state.

He showed that to give a dose of the sulphur gas, it is necessary to be able to know the dosage of each element in it.

These vapors are conducted into the middle ear by an Itard tube, but the manner of compression is not to be neglected, for

it is necessary to be able to vary the pressure of the gases used.

Apropos of the temperature, Lajaunie showed that it was of great use to employ the gases at high temperatures, near their origin.

In summing up, thanks to the special circumstances claimed by the author, the middle state and length of application can be varied at will.

Indications—The author is not a partisan of this method of treatment in suppurative forms, as it can cause acute exacerbations. On the other hand, excellent results are obtained in the chronic, non-suppurative forms, in the old catarrhs, where insufflation of air and bougiring has not helped. This condition is the chief indication for this treatment. In sclerosis of the middle ear, there is frequent diminution of the tinnitus; often a slight improvement in audition, either by an action of the treatment on a chronic concommitant catarrh, or upon the sclerosis itself. At any rate, the progress of the affection is checked.

Total Laryngectomy; Presentation of Patient.

E. LOMBARD (Paris) in the name of M. Sebileau and himself presented a patient successfully operated on by total laryngectomy for cancer. The patient had been operated on less than two months previously and completely cured. He thought this favorable result could be attributed to certain details of the postoperative technique, which are not without importance.

(a) The patient is placed in a reclining position after the operation with his head low, and this position is maintained for about 10 days. This prevents the formidable infection of the cellular tissues of the neck, and is used by Sebileau in his work in all operations where the oral cavity is in extensive communication with the cellular tissue of the neck through the operated field.

(b) Dressing is daily.

(c) Immediately after the operation, the conic canula of Perier is replaced by an ordinary tracheotomy canula, whose external orifice, however, lies about 2 cent. beyond the edge of the skin. This canula allows as thick dressing as may be desired without fear of obstructing the tracheal orifice, and there is no infection of the line of sutures of the trachea to the sutures of the trachea to the skin by the trachael secretions.

Extraction by the Mouth, After Two and One-half Months' Sojourn, of a Foreign Body in the Esophagus of a Child Two and One-half Years Old.

G. MAHU (Paris). The case was one of a foreign body of a discoid shape, of heavy iron, 24 mm. in diameter (wheel of a locomotive, child's toy), held in the esophagus at the level of the first tracheal ring. Its position was determined by the radioscope, only at the end of two and one-half months, the mildness of the symptoms, for a certain time, and a resultless probing having convinced the parents and their doctor that no foreign body was there.

Esophogoscopy having been refused, the extraction was made under chloroform, with no accident, by the aid of a Kirmisson's hook, which seems to me the instrument of choice in this class of cases. The sequelae are very simple. There is no cicatricial contraction of the esophagus, and, after six months, the patient is in excellent health.

The author draws attention to the tolerance of the esophageal walls in this particular case of a discoid body, where it is a question, not as usually of a piece of copper money, but an iron object which probably produced only a slight inflammatory reaction, and no infection.

ABSTRACTS FROM CURRENT OTOLOGIC, RHINLOGIC AND LARYNGLOGIC LITERATURE.

I.— EAR.

Conservatism in Otology.

GORHAM BACON, New York, (*Medical News*, August 6, 1904) enters a plea for a little more conservatism in aural surgery, especially as regards the so-called radical operation for chronic purulent otitis media. He finds many such cases get well when treated along more conservative lines. In considering the advisability of operating on a patient suffering from chronic otorrhea of long standing, it should be determined first of all whether the perforation is sufficiently large for the purpose of drainage. If this opening is large and a probe passed into the attic finds but little carious bone, it is our duty first of all to try to cure the disease by means of injection through a middle-ear syringe. There is but little chance of the disease extending to the brain if the patient is properly treated. Solutions of bi-chloride 1-3000 followed by injections of boric acid in alcohol or iodoform in alcohol are used. Peroxide of hydrogen is never to be used in such a perforation. Exuberant granulations are to be removed and everything done to establish good drainage. Should, however, the patient complain of frequent attacks of earache, and if on examination it is found that good drainage is impossible, the perforation very small, the ossicles carious, the discharge fetid and containing cholesteatomatous masses, and, moreover, if there is a carious condition of the attic, then an immediate operation should be advised. Especially so if there have been frequent attacks of mastoid inflammation as shown by sensitiveness over the process.

Dr. Bacon thinks that in operations on the mastoid process and in those for brain abscess and sinus thrombosis, there is at the present time a tendency to make too extensive incisions over the mastoid and in the neck, without regard to the subsequent disfigurement of the patient. If too much bone is

removed from the mastoid there is liable to be considerable depression and the auricle does not return to its natural position afterward, especially if the incision is carried too far backward and curved over the auricle in the temporal region.

In the Schwartze-Stacke operation there is always a chance of injuring the facial nerve, and while the paralysis may be only temporary, there is a possibility of its being permanent.

Richards.

Treatment of Acute Middle-Ear Disease.

JOHN A. DONOVAN, Butte, Montana, (*Medical News*, September 17, 1904.)

The Value of Early Incision of the Membrana Tympani in the Treatment of Acute Suppuration of the Middle Ear.

FRANCIS R. PACKARD, Philadelphia. (*Medical News*, September 17, 1904.) On the first symptoms of earache Donovan uses heat and dehydrating remedies, and if these do not produce beneficial results in a few hours, he then treats the case surgically by free incision through the entire drum extending into the upper canal wall if necessary, followed by aseptic gauze drainage and outside pad for absorption.

The treatment as given by Packard is essentially the same. After incision of the drum he mops out the canal with peroxide of hydrogen, followed when the discharge is very profuse by a few small syringefuls of bichloride of mercury 1-4000 solution, and then inserts a wick of iodoform gauze to be left in position twenty-four hours or as long as there is no evidence of its damming up the pus.

Both authors speak of the anesthetic effect of anilin oil and alcohol, the formula as given by Packard being five parts of a 10% solution of cocain combined with 50 parts of anilin oil and 50 parts of 5% alcohol. In two of Packard's cases, however, the patients' temperature became subnormal and they were deeply cyanosed, the blueness lasting for several days. (Inasmuch as dangerous results have been reported from this mixture, it seems to the reviewer that its use ought not to be recommended, since as good recovery takes place without its use as with it.)

Packard does not believe in the douching of the area by the patient or nurse since no one but a skilled aurist can properly dry the ear after such procedure, and the little pool of liquid left affords moisture for the furtherance of bacterial growth.

Richards.

Report of Two Cases of Mastoiditis with Paralysis of Facial Nerve; Recovery of Paralysis Following Operation.

SEYMOUR OPPENHEIMER, New York, (*Medical Record,* September 10, 1904). The first case had scarlet fever at ten years of age, followed by suppuration which had continued at intervals up to the age of twenty-seven. On rising one morning he found that there was facial paralysis of the left side. There was nothing abnormal in the mastoid except dull pain on deep pressure over the antrum. The external canal was filled with offensive pus. Operation was done. Considerable granulation tissue with necrotic tissue around the area of the antrum. Complete communication was established between the mastoid wound and antrum and tympanic cavity. The mastoid wound pursued the usual course and in four weeks the patients was discharged with the ear practically dry. The day following the operation there was marked alteration in the paralysis, and at the end of the second week it had entirely disappeared with the exception of the involvement of the chorda tympani nerve. In six weeks there was complete disappearance of the facial paralysis.

The second case had intermittent otorrhea following one year after typhoid fever, which continued more or less intermittent for six years. Four months previous to being seen there was difficulty in whistling, and examination showed facial paralysis involving the lower half of the left side. The mastoid was slightly swollen, painful, and the external canal filled with pus. He at first refused operation. Treatment through the external canal improved the drainage and relieved the pain but had no influence on the paralysis. Finally the patient allowed operation. The interior of the mastoid was extensively disorganized and the antrum and middle ear contained an unusual amount of granulation tissue, and on the posterior wall over the facial canal a sequestrum was removed which allowed the exposure of the facial nerve. The first two weeks after operation there was constant discharge. During the next period of four weeks he slowly improved and the remains of the facial paralysis entirely disappeared. In facial paralysis as the result of mastoiditis the prognosis for the restoration of the nerve function must be derived from an electrical study of the nerve. If the paresis is not well developed and the electrical irritability is normal, a favorable result can be expected a short time after the pressure has been relieved, and in those cases in which partial reactions of de-

generation are present, the mastoid operation should be performed with the expectation of relief some weeks after. But in the class of cases with well-marked reactions of degeneration, the chances are against the restoration of nerve function, though the mastoid operation may be necessary independent of the hope of removing facial paralysis. It is always a matter of precaution to make the electrical tests in order to obtain an intelligent opinion of the probable results of the operation as regards facial paralysis. *Richards.*

Need of More Accurate Knowledge in the Diagnosis and Treatment of Chronic Suppurative Otitis Media.

JAMES F. MCCAW, Watertown, N. Y. (*Medical News*, August 27, 1904). Appropriate treatment of the middle ear will yield good results in a large percentage of cases. If caries is limited to the ossicular chain and there are no contra-indications ossiculectomy should be the operation of selection, while cases presenting symptoms of extension beyond the tympanic cavity should be subjected to the radical operation. *Richards.*

Affections of the Facial Nerve in Diseases of the Ear.

ZIMMERMAN, Milwaukee, (*Archives of Otology* Vol. XXXIII., No. 4). In acute affections of the middle ear, if there be dehiscences of the walls of the facial canal, the nerve is exposed to direct pressure from the swollen mucous membrane or accumulated exudations. Or the inflammation may extend to the neurilemma with resulting perineuritis or by compression of the nerve by congestion of the periosteum or engorgement of the stylo-mastoid artery in the common canal.

Facial paralysis in tuberculous otitis media is eighteen times more frequent than in the simple form (Schwabach.) It is an ominous symptom as it is generally a forerunner of death.

The most frequent cause of facial paralysis is destruction of the Fallopian canal by caries and necrosis of the petrous bone, subsequent to chronic purulent otitis media.

Traumatism may produce facial paralysis either directly, or indirectly, by subsequent hemorrhages or suppuration.

A paralysis immediately following an operation is incurable unless a plastic union is made. Those paralyses occurring after one to a few days are caused by grazing the nerves with instruments, or pressure from blood or wound secretion, or too tight packing and are curable. Prognostic information on

facial paralysis is obtained by electricity. If at the end of 10 days the irritability of the nerve is not below normal the face will probably be well in a few weeks. If on the other hand at the end of 2 weeks the irritability of the nerve is absolutely lost, the paralysis will certainly last for several months.

Incurable facial paralyses have been greatly improved by an anastamosis of the distal end of the facial with a branch of the spinal accessory or with the hypoglossal nerve.

Campbell.

Report of a Fatal Case of Latent Temporo-Sphenoidal Abscess of Otitic Origin, Followed by Multiple Secondary Cerebral Abscesses.

WAKEFIELD, New York. (*Archives of Otology*, Vol. XXXIII., No. 4). A girl, aged 11, who for the past 6 years has had occasionally a slight purulent discharge from the left ear, for the past year has suffered from attacks of headache, dizziness, nausea, vomiting and constipation, with gradual loss of flesh and strength. During a recent attack of right lobar pneumonia persistent severe frontal headache was particularly noted. The pneumonia symptoms disappeared, but her physical condition did not improve. Three days before coming under observation she had a violent chill, became cyanosed and complained of loud noises in her head. Temp. 105° F., respiration 26, pulse 96, and two days later she had a prolonged chill, following which, left ear discharge reappeared with tenderness over the mastoid.

Operation was undertaken, the antrum and aditus were cleared of granulations and the probe detected bare bone on the walls of the tympanum. On exposing the sinus, no pulsations were visible, the dura was thickened and covered by grayish granulations. Incision brought a free flow of blood which was controlled by pressure.

Temporary improvement was followed by recurring chills, high temperature, violent headache, increasing drowsiness, optic discs hazy with beginning dilitation of the pupils. In the absence of localizing symptoms it was determined to explore the left temporo-sphenoidal lobe. Firm adhesions were found between the dura and tegmen tympani and on opening forward and inward into the temporo-sphenoidal lobe about 2 drachms of thin disintegrated brain tissue escaped. The cavity was lightly packed with gauze and dressing applied. For two days improvement was noted, then she relapsed and although a large second abscess was drained left internal

strabismus, left facial paralysis and right hemiplegia developed. She sank into coma and died on the tenth day in hospital.

On post-mortem examination the dura was congested, thickened and firmly adherent along either margin of the median fissure. At the base, the dura was normal except over the tegmen tympani, where the firm adhesions were evidently of long standing.

The left temporal lobe presented near the center of the second convolution an opening which led into a cavity 4 cm. from before backward and 2 cm. from below upward. At the upper and back part of the cavity an opening led into a second cavity 4.5 cm. in its antero-posterior diameter, and 3 cm. vertically.

The surface of the right temporo-sphenoidal lobe was partially collapsed and incision along its outer border allowed four ounces of thin green pus to escape from an abscess cavity 6 cm. horizontally by 2 cm. vertically; from the walls of this cavity a pyogenic membrane extended along the middle horn of the lateral ventricle into the body of the ventricle. At the under surface of the cerebellum a subpial accumulation of pus covered two-thirds of the under surface of the right hemisphere and extended across the medulla, including one-half of the under surface of the left hemisphere. Bacterial examination of the pus showed an almost pure culture of bacillus pyocyaneus.

The history of the case emphasizes the fact that cerebral abscess may develop insidiously and remain quiescent until some acute illness or violent physical exertion renders the latent process manifest.

Localizing symptoms may be absent unless the abscess itself or the surrounding encephalitis encroaches upon cortical areas whose functions are definitely known.

Chronic suppurative otitis media attended with persistent localized headache and occasional attacks of dizziness, nausea and vomiting, and with progressive loss of flesh and strength, should in the absence of tuberculosis or other malignant disease, suggest the possibility of latent cerebral abscess.

Campbell.

Report of a Fatal Case of Brain Abscess of Otitic Origin.

BACON, New York. (*Archives of Otology*, Vol. XXXIII, No. 4). Sixteen months before coming under observation the patient suffered from right mastoiditis, following an acute

suppurative otitis media, for which a simple mastoid operation was performed. One year later there was recurrence and a radical operation (Schwartze-Stacke) exposed the dura and a probe could be passed to the temporo-sphenoidal lobe, but no pus was found. The posterior wound healed while discharge from the canal has persisted with more or less continuous headache. Eye examination showed a double optic neuritis with hemorrhages. Temp. 102.5° F., pulse 80. Somnolence with frequent moaning. A diagnosis of abscess in the temporo-sphenoidal lobe was made.

On operation, the dura above and behind the antrum, was found covered by granulations. The sinus was bared and found healthy. Over the temporo-sphenoidal lobe, as the dura was found tense in the most dependent portion, a scalpel was passed upwards and forwards, when from 2 to 3 ounces of thick, yellow pus were evacuated. Temperature next day 99.4° F. Mental condition improved. This improvement lasted a few days then he steadily grew worse. Further exploration revealed pus farther forward in the temporo-sphenoidal lobe. Post-mortem examination revealed the fact that the abscess had broken into the right lateral ventricle. Smears from the abscess cavity showed a mixed infection of streptococcus, staphylococcus and a thick short bacillus.

Campbell.

Remarks on a Double Cerebellar Abscess, Operation and Recovery.

EAGLETON, Newark, N. J. (*Archives of Otology*, Vol. XXXIII., No. 4). As Röpke has claimed that many successfully reported cases of operation for brain abscess have subsequently terminated fatally, the author has withheld this publication for nearly 2 years. All symptoms present before the first operation were either those of increased intracranial pressure or of irritation, there being no paralysis whatsoever. During the development of the second abscess, a distinct paralysis of the hand and arm of the same side appeared.

The rational method of drainage is through the occipital bone by means of a large opening, and at a subsequent operation one removes the source of infection from the temporal and at the same time opens into the abscess cavity from the front, if better drainage can be secured thereby.

When the exploring instrument has located the abscess, retain it in place till the cavity has been evacuated and the drainage material introduced, otherwise by collapse of the brain

tissue the cavity may not be found again. With free drainage hernia cerebri and optic neuritis should rapidly disappear and their continuance demonstrates that the cause within the cranium has not been entirely removed. *Campbell.*

Sub-Dural Abscess of Otitic Origin, Opening Spontaneously Through the Parietal Bone.

CHAVASSE (*Arch. Inter. de Laryng.*, Sept., 1904). A man aged 23, presented April 13, a fluctuating tumor over the temporal bone extending from the zygoma to the mastoid. Ear fundus normal; history of earache associated with sore throat three months before, which disappeared in eight days without discharge. Abscess was opened revealing a fistulae down to mastoid antrum, which was then laid bare and curetted of its granulations. Four months later as fistulae had not healed, a second curetting and exploration was practiced. No diseased bone discovered. Fever now developed with melancholy and continual pain above and behind the mastoid process suggesting the beginning of a subdural abscess. October 29th, the radical operation was performed revealing periantral cells full of granulations but no fistulae to the cranial cavity. Distinct retinal changes appeared now in the eye fundus and everything pointed to a meningeal irritation. High fever and edema of the tempero-parietal region soon were present over the parietal bone. A zone of infiltration, the size of a two franc piece with fluctuations, was noted on November 12th. This was opened, evacuating a half dram of pus. The probe demonstrated a minute fistula through the bone. Recovery was slow but uninterrupted.

The writer calls attention to a discussion of the subject by Taubert (Archives Intern. de Laryngologie, Sept.-Oct., 1900), who has shown that the development of such abscesses without lesions of the middle ear or without a suppurative lesion is well recognized.

He believes the transmission of the infection was along the epidural path. *Harris.*

Fibroma of Mastoid, Auricle and Auditory Canal.

THOMAS R. POOLEY (*New York Med. Jour. and Phila. Med. Jour.*, Dec. 17, 1904). A man aged 29, thirteen years before had a growth removed from behind his ear and from the auditory canal. Five months ago it recurred. Tumor as seen on admission to hospital was an elastic growth of the size of a

pigeon's egg attached to auricle posteriorly. Another filled the meatus. Operation showed larger growth attracted the cartilaginous concha. After removal, wound closed with silk suture. Suppuration followed almost immediately, with return of the tumor in canal. This persisted in spite of all treatment until the X-rays were employed when improvement at once took place. This continued to full recovery. The pathologic report showed a fibroma. Pooley calls it, however, clinically a sarcoma or as Paget described them, "recurring fibroid tumors."

Harris.

Nomenclature of the Various Affections of the Mastoid.

EMIL AMBERG, Detroit, Mich., (*Detroit Medical Journal,* Nov., 1904), suggests the following nomenclature:

Mastoiditis acutissima for the cases which take a rapid course, clearly showing alarming local and general symptoms, especially of a toxemic character, and which do not respond to palliative measures.

Mastoiditis acuta for those which take a somewhat more protracted course, extending over a period of one or several weeks, exhibiting plain local symptoms, but which are not accompanied by intense pain nor by a grave affection of the whole system, which temporarily respond to palliative measures.

Mastoiditis subacuta for those which take a mild course.

Richards.

Report of an Anomalous Lateral Sinus. Report of a Case of Thrombosis of the Lateral Sinus.

BARTON H. POTTS, Philadelphia. (*American Journal of the Medical Sciences,* October, 1904). The patient died from cerebellar abscess twelve hours after operation. The sinus lay immediately below the external table and passed *through* the mastoid cells, being surrounded on all sides by pus, granulations and mastoid cells. It looked exactly like a large tube passing through the mastoid space. The horizontal portion crossed the mastoid space entirely, being separated from the external canal by a layer of bone not more than 3 mm. in thickness, and then made a sharp bend downwards and backwards.

The second case was a woman of 23, complaining of pain all over the head, tinnitus, vertigo, anorexia, with discharge from the right ear.

Purulent mastoiditis was diagnosed, free paracentesis and

incision of the canal wall, hot douching, and dry heat externally, lessened the pain. On the fourth day there was a sharp rise in temperature, but without a chill. The temperature gradually subsided during the next thirty-six hours, when there was another sharp rise. Immediate operation was then done; usual mastoid first. The sigmoid sinus was found uncovered and contained a firm clot. The bone was removed in the direction of the jugular bulb and backward along the lateral sinus, the latter also being filled with clot. The jugular was then ligated 3 cm. below and 3 cm. above the facial, and entirely excised. The sinus wall was freely incised, and a curette passed down toward the jugular bulb and backward through the lateral sinus for 5 cm. until a free flow was obtained. This was at first an offensive reddish-brown fluid, and was allowed to continue until normal dark-blue blood appeared.

The neck wound was closed with interrupted sutures, and on the fifth day showed healing without first intention. Convalescence was without complications. *Richards.*

Fatal Case of Cerebellar Abscess.

JOHN H. ALLEN, Portland, Me., (*American Medicine*, January 7, 1905.) The patient was a boy of 16, suffering from acute otitis media with slight tenderness over the mastoid, for which the usual operation was done, and a considerable amount of pus was found beneath the cortex, all the carious cells being curetted out. There was improvement for 10 days except for a slow pulse. This, which had been between 75 and 90, dropped the third day after operation to 55. The temperature ranged a little above normal. There was drowsiness and hebetude for the next few days. On the fifteenth day after the operation he vomited in the morning, and in the afternoon the temperature went to 102, with pain and violent headache. There was leukocytosis of 15000. There were no sensory or motor pareses and no dizziness, no reduction in the high limits of hearing.

A second operation was done. The sinus was uncovered, found normal, the dura exposed, but as it appeared normal, was not punctured. A somnolent condition developed after this operation. Pulse, which was 100 in the morning, dropped to 55 in the afternoon the third day after the operation, and the condition of hebetude continued, followed later with a period of active delirium. Cheyne-Stokes respiration developed, and the patient being in a semicomatose condition, the third opera-

tion was done. The wound was reopened, the incision extended upward, making a flap over the squama. The dura was again exposed, incision over the tegmen, and a director passed inward, but no pus was found. Temperature continued to rise. Patient died with a temperature of 103 at 8 p. m. of the same day.

At the autopsy an abscess of the cerebellar was found with pneumococcus infection. The abscess was below the tentorium cerebelli, and about 30 cc. of light yellow, odorless pus was found. On section of the left cerebellar lobe an abscess cavity 4½ cm. in diameter was found, taking up a large part of it. This abscess cavity showed no pyogenic membrane, and was comparatively recent. Smears from the pus showed a lance-shaped diplococcus, with a definite capsule staining by the Gram eosin method. Many of the cocci showed degenerative changes.

In this case there were no localizing symptoms, the headache being variable in its location, there were no pareses or aphasia, and examination of the wound gave no indication of the site of the abscess. *Richards.*

Thrombosis of Lateral Sinus Following Acute Otitis Media.

M. V. BALL, Warren Pa., (*American Medicine*, September 17, 1904). The patient was a teacher of 28, who was taken sick April 18th with an exudative tonsillitis, which showed on culture streptococcus pyogenes albus. One week later there was pain in the left ear. Incision of the drum showed suppuration, and the pus on culture showed streptococci. The temperature which followed the next day was 104, with tenderness over the mastoid. Consultation. Consultant advised against operation. Following day swelling behind the auricle, severe chill, temperature 106. Mastoid opened. A few cells near the tip diseased; rest of the bone healthy. Temperature the following morning 98.2. Six p. m. had a chill; temperature 107. Day following, comfortable. Third day after operation, chill, temperature 104, sinus now explored. A few more cells filled with granular material; soft suppurative clot found filling the sinus; one dram of pus flowed out from below. Jugular not explored. Recovery from operation fairly good. Had temperature and chills next few days, temperature ranging from 99 to 105.

May 13, jugular explored and ligated. Jugular showed no signs of thrombus. From this time until May 21, when death occurred, the temperature took a continuously septic course. The

ear, however, entirely ceased discharging. Antistreptococcic serum, 40 cc., and unguentum Crede were used without any appreciable effect. Pus from the lateral sinus showed the presence of streptococcus, showing that the process started at the tonsil. Blood cultures were sterile. The reporter thinks an early chill with a freely incised sympanum points to a thrombosis even though the mastoid be but slightly affected, and that after such a chill the region of the sinus ought to be explored. *Richards.*

A Case of Pulmonary Tuberculosis, with Interstitial Neuritis of Both Cochlear Nerves, Together with Persistent Embryonic Adhesions in the Scala Tympani.

SIEBENMANN, Basle (*Archives of Otology*, Vol. XXXIII., No. 5). The changes found were:

1. Slight cloudiness of both drums.
2. A non-perforative middle ear suppuration on the right.
3. Closure of the lower end of the scala tympani by bony connective-tissue and thickenning of the bony foot-plate of the stapes like a monstrosity of the right ear.
4. Interstitial neuritis of both cochlear nerves.

The consensus of investigations shows that sometimes a polyneuritic degeneration of the acoustic nerve comes about in a hematogenous way and appears simultaneously with extensive febrile tuberculous affection, which ends perniciously. The cochlear nerve, alone or the whole acoustic trunk may be affected. In these cases one may find either a simple degeneration or an interstitial inflammatory affection; in both cases, however, the primary seat of the disease is located in the retro-labyrinthine section of the acoustic nerve, as far as can be asserted from post-mortem results.

Only in rare cases, in which the patient survives the deafness for a long time, simple atrophic changes in the intra-labyrinthine section of the acoustic nerve develop in addition to this primary retro-labyrinthine disease of the trunk.

The clinical symptoms of the ear consist in decrease in hearing on both sides, which in rare cases comes on by degrees, but in most cases acutely and then leads in a short time (days or weeks) to complete deafness. Often, but not always, there exists subjective noises and when the vestibular nerve is affected, which is not frequent, the decrease in hearing is accompanied by violent vertigo. *Campbell.*

Otitic Brain Abscess.

UCHERMANN, CHRISTIANA. (*Archives of Otology,* Vol. XXXIII, No. 5.) The author reports eleven cases, three of which occurred in children; eight occurred in males and three in females; three occurred in acute and eight in chronic suppurative otitis. In nine the abscess was situated in the temporal lobe and two in the cerebellum.

Headache, either diffuse or localized, is the most constant symptom. It occurs principally in the occiput and frontal regions. The location of pain, usually, does not correspond to the seat of the abscess, although in hemicrania the abscess is nearly always situated on the painful side.

Vomiting usually occurs and is most pronounced in cases of cerebellar abscess.

An important sign is optic neuritis, but as a rule it is a later development, concomitant with slow pulse, which, likewise is due to pressure. Focal symptoms denote the involvement of finite areas of the brain. Muscular twitching is now generally looked upon as the result of meningeal inflammation. It usually occurs on the same side as the abscess, but frequently occurs on both sides.

The terminal stage is manifested by coma, with or without convulsions, and is most likely to end in paralysis of respiration. When it comes on suddenly it is due to rupture of the abscess into one of the lateral ventricles or the sub-arachnoid space.

Operative treatment should not await the development of local symptoms. In doubtful cases make an exploratory puncture and if an abscess is found drainage should be made as perfect as possible by splitting widely the wall of the cavity through the introduction of long, thin forceps with blades closed and their withdrawal with blades apart. After the cavity has been cleansed as thoroughly as possible a drainage with inner end and sides wrapped in iodoform gauze is inserted just within the cavity and then sutured to the skin flap. During the entire course of subsequent treatment the patient remains in the recumbent position. *Campbell.*

On the Operative Treatment of Otitic Intracranial Complications.

DENKER, ERLANGEN. (*Archives of Otology,* Vol. XXXIII, No. 5.) Six cases are reported which followed acute and chronic purulent otitis and were all operated upon. It is well known that bacteria and toxins may pass to the endocranium

by way of all the tympanic walls with the exception of the outer wall and by way of the bony surfaces of the mastoid, which border on the middle and posterior cranial fossæ.

The infection may travel along bony and vascular channels as well as through defects in bone, which are not infrequent in the roof and in the floor of the tympanum. The process may further lead to destruction of a window membrane or a part of the labyrinth wall and gain access to the posterior cranial fossa.

In addition to the more frequent otitic complications, we find rarely serous meningitis, a condition which has not as yet been demonstrated at autopsy, edema of the brain and cerebral embolus in otitic thrombosis of the carotid artery. The operations were undertaken on account of the following conditions:

1. Mastoiditis and perisinous abscess in acute otitis media.
2. Extradural abscess in middle cerebral fossa and fistula in external semicircular canal in chronic otitis media.
3. Temporo-sphenoidal abscess in chronic otitis medica sinistra.
4. Temporo-sphenoidal abscess, extradural abscess and subperiosteal abscess.
5. Pyemia in acute otitis media.
6. Multiple cerebral abscesses; basilar meningitis. In this case the only one to result fatally a large cerebral abscess was evacuated one month after the ear bgan to suppurate. Two more abscess were found post-mortem. The larger one of the two having broken into the arachnoid space. *Campbell.*

A Case of Thrombosis of the Jugular Bulb. Operation. Recovery.

KOLLER, New York. (*Archives of Otology.* Vol. XXXIII, No. 5.) This case presented the features of a primary phlebitis of the jugular bulb. After suffering for two weeks from an acute otitis media, the patient presented unmistakable signs of thrombophlebitis, high fever with chilly sensations, sensitiveness to pressure over the course of the sigmoid sinus and the upper course of the jugular in the neck. Papillitis rapidly developed and this Jansen claims is a common occurence in cases of primary phlebitis of the bulb. The mastoid was but slightly affected and there was no perisinous abscess.

As the first operation brought no relief, the sigmoid sinus was exposed in its entire length and found thrombosed. Upon curetting it bled freely from above, but not from the bulb region. The jugular vein, therefore, was ligated in the neck

and 1½ inches dissected out. It was not thrombosed and a blood-culture was sterile. Symptoms persisted till the dressings were removed, then pus escaped from the lower part of the sinus groove. Later a swelling appeared in the neck below the occiput, which communicated with the intravenous abscess, as evidenced by the fact that pressure made over this swelling caused pus to ooze from the lower part of the sinus groove. When this and a peribulbar abscess were drained, recovery speedily ensued.

The left hypoglossal paralysis took some months to disappear, while the papillitis cleared up more speedily.

Campbell.

A Phonographic Acoumeter.

BRYANT, New York (*Archives of Otology*, Vol. XXXIII, No. 5). Its advantage is that the voice produced by the machine has a constant pitch and intensity, while the intensity can be varied from zero to the loudness of the voice when the speaking-tube is used. Simulated deafness can be detected through the use of the three-way valve by which the sound can be turned on or off in the individual ear, or by rapidly alternating. The patient becomes so distracted as to prevent replies consistent with any considerable degree of real deafness.

Campbell.

Earache, or Cases of Early Involvement of the Middle Ear, Usually Neglected.

FRANCIS P. EMERSON, Boston (*Boston Medical and Surgical Journal*, September 29, 1904), reports four cases of ear trouble due to small amounts of adenoids in children who did not show the typical adenoid facies, and in whom mouth breathing was not a prominent factor. Removal of the adenoids improved the general condition and stopped the earaches. He thinks that a child whose upper respiratory tract is normal rarely suffers from bronchitis or head colds.

Richards.

II.—NOSE AND NASO-PHARYNX.

Headache from Non-Suppurative Inflammation of the Accessory Sinuses of the Nose.

CHARLES M. ROBERTSON, Chicago (*Journal American*

Medical Association, March 5, 1904), thinks that many cases of headache are due to disturbances in air pressure in the frontal sinuses, and reports two such cases, the first of which was treated by an oculist without relief. Contraction of the middle turbinate so as to open up the natural passage to the antrum relieved the symptoms.

In the second case there were severe headaches, entirely relieved by removal of the anterior end of the middle turbinate. These cases were unaccompanied by any sign of suppurative inflammation of the sinuses. He thinks they are due to diminution of air pressure in the sinus, the middle turbinate being swollen so that the sinus cavity is cut off from the nasal chambers, following which the imprisoned air loses its oxygen, with the result that the pressure on the mucous membrane is lessened by rarefication of the air contained in the cavity.

Attention to the middle turbinate is imperative, as it is the key to the most important part of the nostril. *Richards.*

Adenoids in Infants.

HERMAN JARECKY, New York (*New York Medical Journal* and *Philadelphia Medical Journal*, August 13, 1904.) Jarecky reports five cases of adenoids in infants under three weeks, the age being respectively eight weeks, eight weeks, ten weeks, nine weeks, and eight days old. To meet the difficulty of operation on such young children he had an oval curette made, the cutting surface of which was six and a half by five and half mm. with a depth of 2 mm. set at an angle 120 degrees to the shaft, about 10 mm. above the bend. The shaft is slightly pliable and has a handle 20 cm. long. The patient was held in the arms of a nurse, and no anesthetic was used.

Richards.

Primary Nasal Diptheria. A Plea for its Early Recognition and a Report of Three Cases.

ANNA S. WILNER (*New York Med. Journal* and *Philadelphia Med. Jour.* Dec. 17, 1904.) The grave form of nasal diphtheria is emphasized in every text-book, bearing on the subject of diphtheria.

The mild form is entirely passed over. It usually occurs in children otherwise well and only suffering from a persistent nasal discharge. The disease may, however, spread and become dangerous. The chief peril, however, lies in the liability of infecting others. This is correspondingly greater than other

forms because it is liable to be overlooked. Forty per cent. of all cases of diphtheria are complicated by the nasal form, while the Klebs-Loeffler bacillus is the invariable cause. All the infectious diseases serve as contributing causes, rendering a non-virulent bacillus pathogenic. In like manner a blow upon the nose, the use of the galvano-cautery in the nose may produce a like result. A persistent watery discharge excoriating the upper lip, with a grayish white membrane in the nose are the characteristic symptoms. Constitutional symptoms are usually absent. Wilner discusses the reason for the absence of the general infection and adopts Holt's theory, viz.: The poor absorbing qualities of the exterior mucous membrane of the nose. She is inclined to regard every case of fibrinous rhinitis showing Klebs-Loeffler bacillus as diphtheria regardless of its virulency. Emphasis is laid upon the importance of taking cultures in all persistent nasal discharge of children and attention is called to be value of the nasal bath as a prophylactic measure.

Cardiac Collapse During Examination of Post-Pharyngeal Abscess; Incision; Circulation Re-established and Maintained for Hours by Massage of the Heart; Death.

DAVID CHEEVER, Boston, Mass., (*Boston Medical and Surgical Journal,* January 5, 1905.) The patient was a child of three years with post-pharyngeal swelling, who became asphyxiated during the examination. The child struggled ceaselessly. The introduction of the gag caused such choking and cyanosis that it was withdrawn, with immediate relief to the symptoms of asphyxiation. The gag was again placed in position but the condition became at once alarming and breathing ceased. The child was laid on the table and artificial respiration begun. There was no pulse at the wrist, no cardiac sounds heard with the stethoscope, and normal respiration had absolutely ceased. The abscess was opened in the Rose-Trendelenburg position, and artificial respiration, inflation of air directly into the lungs through a rubber tube, cardiac massage, sixty pressures to the minute, artificial heat and stimulation were all used without avail and continued until rigor mortis set in four and one-half hours afterward.

Death was evidently caused by cardiac collapse due to shock, in a patient whose condition of extreme exhaustion made the necessary manipulations in preparing to open the abscess a source of grave danger.

Another case is also reported in which cardiac collapse took place after incision of the post-pharyngeal abscess in a child, and where the usual measures for resuscitation were unsuccessful until hasty tracheotomy finally resulted in the re-establishment of the respiration. This patient again collapsed an hour later in the ward and was with difficulty revived. He was finally immobilized on a Bradford frame which was then inverted so that the patient hung face downward with the head at a lower level than the feet. This position afforded drainage for the abscess cavity and for the respiratory passages, kept the blood in the vital centers, and the patient finally recovered.

The third case is briefly referred to where the patient collapsed immediately after incision of a retro-pharyngeal abscess, and made slow recovery only after vigorous measures for resuscitation.

The author thinks that in cases similar to the one first reported, a preliminary tracheotomy would seem to be a conservative procedure. It could be quickly done under cocain or even without anesthesia, and although the child's struggles might be exhausting they would, at least, not be accompanied by the element of suffocation. *Richards.*

The Ultimate Results of Cauterization of the Lower Turbinate, with Therapeutic Suggestions Based Upon Histologic Findings.

J. L. GOODALE, Boston, Mass. (*Boston Medical and Surgical Journal,* December 29, 1904), has examined histologically the lower turbinates from a series of cases which had in the past been cauterized for congestion or hypertrophy of the lower turbinates, and which had reported later at varying intervals with a return of the symptoms.

The removal was done with nasal scissors and was confined to the mucous membrane and the soft tissues immediately beneath. The excised tissue was placed immediately in Zenker's fluid, or in a saturated solution of corrosive sublimate. The most satisfactory method for demonstration of the fibrous tissue was found in Mallory's triple stain, which gives exceedingly beautiful pictures. In connection with this, staining by hematoxylin and Congo red was employed for the purpose of demonstrating the nature of the glands, whether mucous or albuminous. Paraffin sections are stained in the customary way in either aqueous alum hematoxylin, or in Delafield's hematoxylin, washed several hours, then

stained in 1-10 to ¼% Congo red for one to five minutes, washed in 95% alcohol to remove excess of stain, dehydrated in absolute alcohol, cleared in xylol and mounted.

He finds as a result of these examinations:

(1) Caustic applications to the nasal mucous membrane may cause a loss of the columnar, ciliated epithelium, with a replacement of this by cells of a squamous type.

(2) Such applications may cause an obliteration of the canaliculi in the basement membrane.

(3) Immediately below the cauterized mucous membrane, new connective tissue may be formed, which extends downward to a depth dependent upon the intensity of the trauma.

(4) The contraction of the tissues which is observed clinically to follow caustic applications is due to the contraction of this new-formed connective tissue, and the subsequent compression both of the lymph sinuses, and of such cavities as the lumina of blood vessels and glands.

(5) Repeated superficial applications of caustics tend to the formation of connective tissue immediately beneath the epithelium, which by its contraction may constrict the lumen of the ducts of the glands, and lead to cystic dilatation of the latter. This phenomenon may contribute to a subsequent return of the nasal obstruction. Such applications become progressively of less avail, owing to the relatively impervious barrier presented by the pavement epithelium and compact fibrous tissue immediately beneath.

Where the object is to contract a relaxed or distended mucous membrane, an endeavor should be made to reach the submucous and deeper layers, at the same time producing the minimum amount of disturbance in the mucous membrane itself. This is best done by deep, narrow linear applications either of chromic acid or of the galvano-cautery, or by submucous cauterization.

If, on the other hand, the endeavor is to diminish the amount of nasal fluid, as in some forms of excessive postnasal secretion, broad, superficial applications to a definite area of the septum and lower turbinates posteriorly may be used.

In the event of recurrence of the enlargement after cauterization it is probable that the mucous membrane is very impervious and resistant and has an increased amount of connective tissue than was originally present, and that subsequent cauterization is less likely to bring about contraction

of the parts. Here it is probably best to dispense with further cauterizing and instead to excise a definite amount of obstructive tissue. *Richards.*

On the Radical Operation for Chronic Empema of the Frontal Sinus According to Killian.

ESCHWEILER, BONN. (*Archives of Otology,* Vol. XXXIII, No. 5.) The author reports eight cases and consider's Killian's operation therapeutically and cosmetically the best treatment for chronic empyema of the frontal sinus.

In a sinus shallow vertically, but deep antero-posteriorly, removal of the floor is very arduous. Great care must be exercised in preserving the attachment of the tendon of superior oblique muscle with the periosteum. Then detach the trochlea in toto and afterward attach it by suture to the supraorbital bridge. If diplopia follows, it is likely to be but transient.

In no case had the author any iritic irritation. He emphasizes, however, the fact that the eyeball should be spared all pressure and should not be used as a support for numerous artery clamps. He immediately ligates all blood-vessels.

While taking away the interior sinus wall and retaining a supra-orbital bridge use very sharp chisels, otherwise one may produce a fracture of the bridge.

In making a broad communication with the nose, resect the frontal process of the superior maxilla with cutting forceps and do not tear away adherent spicules of bone for fear of injury to the lachrymal sac. Where the anterior part of the middle turbinate is to be resected, this should be done under cocain anesthesia prior to the Killian procedure.

It is especially important that the whole floor of the frontal sinus be removed up to the point of junction with the upper wall, so that no bony recess may remain, and that the orbital soft tissues may rise and fill the cavity.

On account of the complicated structure of the accessory cavities of the nose, anatomic healing is not always possible. The author considers it a satisfactory result when (1) The cutaneous incision is closed. (2) the frontal-sinus region is no longer tender on pressure. (3) No marked diplopia (4) The patient is able to work. *Campbell.*

A Case of Supposed Primary Tuberculosis of the Pharyngeal Tonsil.

DONALD M. BARSTOW, (*New York Medical Record,* October 8, 1904), reports the removal under cocain of a soft,

friable mass of adenoid tissue from a man of 24, who is in good health, but who, for the past three of four months, has suffered from a continuous bad cold in the head, with a good deal of expectoration, and who, about a month ago was found by his attending physician to have tubercle bacilli in the sputum. The day before the operation was done, the patient's sputum contained innumerable tubercle bacilli, and quite a large number of streptococci. Fifteen days after the operation examination of the sputum showed only a very few tubercle bacilli, which were present either isolated or in small groups. Five months afterwards he had gained eleven pounds, and the sputum was negative as to tubercle bacilli.

The adenoid tissue contained six or eight small rounded areas of epithelioid cells, separated by a fine fibrillated reticulum. One nodule showed a caseous center, at the margin of which was a large oval giant cell with chiefly polar nuclei. Several isolated giant cells were observed also within the epithelioid cell nodules, but always single and eccentric. These giant cells had fibrillated prolongations continuous with the intercellular reticulum above mentioned, "the collective features corresponding to the classical description of the histologic structure of a tubercle nodule before caseation has occurred."

The writer regards this as a case of primary tuberculosis of the hypertrophied pharyngeal tonsil, basing his conclusions on the fact that two years of cough, with a large quantity of bacilli would ordinarily have indicated a fairly extensive lung lesion, which was not present. Finally, there was an immediate improvement of the symptoms, with almost complete disappearance of bacilli from the sputum, seeming to prove that the tuberculous adenoid was the main lesion if not the primary one. *Richards.*

III.—MOUTH AND PHARYNX.

Hypertrophy of the Lingual Tonsil.

J. J. RICHARDSON, Washington, D. C. (*American Medicine*, September 3, 1904. The cough is the most prominent symptom, and may give the impression that the patient is suffering from tuberculosis, especially if other symptoms such as rup-

ture of the varicose veins or gastric disturbances be present. The author regards 20% as a moderate estimate of the number of public speakers and singers subject to this condition, the principal symptom of which in their case is fatigue in singing and speaking. For treatment he prefers the lingual tonsillotome of Myles. This, if used under the influence of 10% cocain solution is not painful. If swallowing is painful after the operation, orthoform can be insufflated. The operation should not be performed on tuberculous patients.

Richards.

A New Pathogenic Throat Organism.

B. H. STONE, Burlington, Vt. (*Medical Record,* August 13, 1904.) In the winter of 1903-04 there appeared throughout the state of Vermont cases of an acute inflammatory condition of the throat, accompanied by a severe but not fatal toxemia, lasting from twenty-four to forty-eight hours and then subsiding. Cases were ushered in with a chilliness, pain in the head and limbs, coryza, and an unusual amount of sneezing. The tonsils were more or less swollen in nearly all cases, with edema of the soft palate and uvula, and in many there was a distinct false membrane, white in color, and very tenacious. Of 81 cases studied bacteriologically, 44 showed a membrane, but the author regards this percentage as probably too high, as in most of the cases examined, they were also cultured for suspected diphtheria. The toxic symptoms subsided in two days, leaving in most cases an irritable condition of the mucous membrane, persisting for some time. The attacks were not confined to any particular age, and affected both old and young. Cultures taken from the throat showed the pure culture of a diplococcus. The diplococcus occurs in the secretions and exudations of the inflamed mucous membrane. When stained by Loeffler's stain, one or both of nearly every pair has a distinct metachromatic ganule which stains very intensely. When stained with fuchsin, the granule does not show. One of the pair is often smaller than the other. In preparations made from bouillon or blood serum cultures, the pairs are clumped in irregular bunches, apparently held together by some gelatinous material which does not stain. They stain readily by Loeffler's and fuchsin and by Gram's method, although the clear space between the members of the pair and the polar granules are best seen with the first stain. They possess no flagella, spores, or demonstrable capsule. Almost no growth

occurs in gelatin and there is no liquefaction.

On an agar plate grown at 37° C. for twenty-four hours round regular colonies appear. They are white, raised (pulvinate), and very tenancious, so that it is impossible to take up any of the colony without taking it all. They grow very little larger than the head of a shawl pin.

On agar streak cultures the character of the growth is similar to that on plates. The white colonies are first discrete, regular in outline and pulvinate, but gradually they coalesce along the line of the needle tract, and the result is a more or less continuous nodular growth. Growth is never luxuriant, however, and does not spread laterally far from the needle tract.

On blood serum growth is quite luxuriant, appearing first as moist, glistening, white colonies, which soon coalesce, forming a viscid, extremely tenacious skin over the whole surface of the medium. The medium is not liquefied.

Five animals were inoculated, three of whom died, and in two of whom the experiments were negative. At the autopsy only a slight subcutaneous edema with a collection of white, viscid, tenacious pus was found around the peritoneal wound, while the peritoneal cavity contained much semi-solid tenacious exudate, which microscopically showed fibrin, pus cells and diplococci. Blood serum cultures made from the peritoneal exudate resulted in the growth of a pure culture of this diplococcus.

The author regards this organism as the etiologic factor in the above described throat cases, even though efforts to reproduce this peculiar lesion on the mucous membrane of laboratory animals have been so far unsuccessful, and for the following reasons:

1. Because it has been found constantly present in these cases in almost pure cultures and isolated while no other organsims are constantly found.

2. Because it is not generally found in healthy throats. An examination of over two hundred cultures, made from healthy throats, have failed to show this diplococcus in hardly any case in which it could not be explained as persisting after an acute attack.

3. Because it is toxic for laboratory animals producing on serous membrane an exudate analogous to that produced in the throat, from which exudate it has been recovered in pure culture.

4. Because it produces a soluble toxin sufficiently virulent to kill animals.

Because its blood serum growth has a peculiar viscid character, suggesting the extreme viscidity of its exudate in the throat. *Richards.*

Two Cases of Vincent's Angina, and One of Noma, in Which the Organisms Characteristic of the Former Affection Were Found.

RANDLE C. ROSENBERGER, Philadelphia (*American Medicine*, July 23, 1904). The conditions known as Vincent's Angina is a diphtheroid angina, characterized by a grayish or whitish pseudomembrane, and at times with a pronounced adentitis, which may be very easily confounded with true diphtheria. It usually attacks one tonsil or the neighboring pillars. At the height of the affection the tonsil is covered by a grayish or whitish plaque, is soft in consistency, easily detached by scraping, and on being removed leaves a bleeding surface with reformation of the membrane the next day, becoming thicker and softer on the third and fourth days. The bacillus which causes the affection is 10 to 12 microns in length, does not stain by Gram's method, and is often, though not constantly, associated with a fine spirillum. This bacillus is the Bacillus fusiformis, is pointed at the ends and somewhat bulging at the center, occurs in bundles, frequently in pairs, as diplobacilli, radiating at an acute angle to one another, or at times irregularly grouped. It forms vacuoles and other degeneration forms, does not generate spores, stains by Gram's method and possesses long flagella, one at each end and two on each side. Pure cultures have not been obtained. The accompanying spirillum (Spirochaetis denticola) is thin and long, does not stain by Gram's method, and stains faintly with all dyes and has not been cultivated in pure culture. It is generally looked upon as a saprophyte of the buccal cavity but can overcome its saprophytic existence and become pathogenic in the presence of other microorganisms.

Cultivation and inoculation experiments are generally negative. Vincent's angina is communicable only within very narrow limits. The lesion cannot be produced by these organisms upon healthy mucous membrane or skin; there must be some pre-existing wound. For example, it may occur after tonsillotomy, or through the bleeding gums of scorbutics.

Three cases are reported. The first, female, age 22, slight soreness of the throat for three days attended by pain upon

swallowing. There was slight swelling and edema of the right tonsil and pillars of the fauces with an exudate of a dirty gray color upon the pillars and upon several tonsillar crypts. Removed with difficulty, leaving a bleeding surface. Two days later the symptoms complained of were disappearing, and in four days the exudate was almost gone. There was no rise of temperature nor other systemic symptoms.

The second case was in a child of nine months. There was a grayish, adherent white membrane to the gums and posterior fauces. On removal there was a bleeding surface. In a few days the child was well.

The third case, a child of three suffering from noma. In her the whole left cheek was gangrenous. Spreads were made from the margin of the process nearest the mouth.

Spreads made from the affected areas in these three cases contained numerous cellular elements, mostly polymorphonuclear leukocytes, few lymphocytes, together with squamous epithelial cells, and a few shreds of fibrin.

From diphtheria the lesion can most readily be differentiated by making spreads from the affected area, which will show the two associated organisms.

There seems to be no doubt that the disease here reported upon, Vincent's angina, is a distinct, clinical and pathological entity, and due to infection by the symbiotic fusiform bacillus and spirillum of Vincent. That it is not more often described and diagnosed seems to be due to the fact that only inoculations upon culture media, and no spreads from the affected area or areas are made. *Richards.*

Tonsillar Ulceration in General.

THOMAS J. HARRIS, New York City. (*American Medicine*, July 23, 1904.) By "primary" is here meant all those forms of tonsillar ulceration in which the ulcerative process has its origin in the tonsil and represents the entire cycle of the disease.

Membrano-ulcerative tonsilltitis—the so-called angina of Vincent is probably the most frequent. As this condition clinically somewhat resembles diphtheria and syphilis, it is important to differentiate it from them. The microscope is necessary in some instances. The author thinks some cases of Vincent's angina have probably been diagnosed as syphilis or diphtheria. This disorder has a definite course, terminating

in a few days with healing of the ulcer and subsidence of the glandular involvement.

Acute lucunar ulcerative tonsilltitis occurs in young persons; nothing characteristic in the way of symptoms; discomfort referred to the throat rather than real suffering. On the affected tonsil there is a smooth elevation surrounded by a zone of inflammation, the rest of the gland being to all appearances normal. Ulceration follows the elevation but without increase of symptoms. The ulcer is covered with a brownish detritus, and in three or four days it can invade the entire tonsil, but does not pass this limit. The cicatricial stage comes on gently. No specific microbe has as yet been discovered. Many bacteria have been found, mostly streptococci, staphlococci, and slender rods. The chief interest to the clinician lies in the differential diagnosis. Pseudodiphtheric ulceration is of importance on account of its resemblance to diphtheria, from which only bacteriologic examination will enable one to differentiate it oftentimes. This affection may be benign, but occasionally the symptoms are very severe. There is a high fever, adenopathy and dysphagia, suggesting a polymicrobic diphtheria. The false membrane is thick, friable, grayish-bloody in appearance, resembles diphtheria, and may involve the pharynx and nasal fossae. It persists three days and is followed by irregular ulcers of varying depth.

The secondary form of this affection is seen most often in connection with scarlet fever at the eruption period, and may be of two degrees of severity, varying from the benign form, healing in eight or ten days, to the grave form producing constitutional infection, suppurations, etc., and the septic form, causing septicemia and death.

Gangrene of the tonsil may rarely produce primary ulcer. The primary ulceration of the tonsil due to syphilis occurs, and may be passed over unless looked for. This ulcer is not extensive and is confined to the tonsil. Primary tuberculous ulcer of the tonsil is extremely rare.

The secondary ulcerations are briefly referred to, the principal causes of these being diphtheria, typhoid, tuberculosis, lupus, syphilis, secondary and tertiary, and malignant disease.

Richards.

Bone and Cartilage in the Tonsil.

JAMES E. NEWCOMBE, New York. (*The Medical News*, September 24, 1904). Case is that of a woman of 30 years with

moderately enlarged faucial tonsils. The right tonsil was removed with the MacKenzie instrument without incident, but on attempting to sever the left one as the blade of the instrument was driven home, the sensation was experienced of driving through some hard substance which, however, was easily pierced. Examination of the tissue showed the presence of a small rounded tip of bone. Palpation of the tonsillar stump showed that this tip belonged to the styloid process, the remainder of which could easily be made out.

Richards.

Report of a Case of Primary Lupus Vulgaris of the Oropharynx and Nasopharynx Treated by X-Rays.

H. S. BIRKETT, Montreal. (*Medical Record,* December 24, 1904.) The patient, a boy of 15, was first seen in November, 1902. Previous health good. One brother and three paternal uncles died of pulmonary tuberculosis. Patient occupied the room in which his brother died of tuberculosis. Lymphatic glands in the neck much enlarged. On the lateral and partly on the posterior walls of the pharynx are two distinctly nodular growths, each nodule being about the size of a swollen sago-grain, quite separate and distinct in the central portion of each mass, but merging into another at the periphery. The infiltration on each side has invaded the posterior pillar about 2 mm., and each is separated from the other by a superficial ulceration 10 mm. wide. The adjacent structures, tonsils and anterior pillars, are not involved. Examined with the mirror the growths were found to extend upward to the cushion of each Eustachian tube, but not into the posterior nares. The pharyngeal surface of the uvula showed two distinct nodular infiltrations, each about the size of a lentil.

Under ether the greater portion of the masses was removed. The pathologic report showed numerous tubercles in the submucous tissue. These consisted of a central portion of young fibrous tissue with numerous typical tuberculous giant cells. Tubercle bacilli were present but few in number. A guinea pig, inoculated in the peritoneal cavity with portions of the tissue, died in three days from septicemia. A second one inoculated in the groin was found to have general glandular tuberculosis. Koch's tuberculin was used, the patient's temperature rising to 101 in twelve hours, and falling to normal in thirty-six hours. Local

treatment of curetting and lactic acid in glycerine were used without any result.

In January, 1903, the patient went home, returning in April of the same year with the local condition practically unchanged. He was then treated with the x-rays for twenty-ty-three treatments, the face being protected by a piece of wood which had been painted with eleven coats of white lead on each side, sufficient to shut out all unnecessary x-rays. This wood was 12 in. x 12 in. and had a hole in the center about three inches in diameter. The patient opened his mouth as widely as possible and held the screen close to his face and in such a position as to let the x-rays pass through the hole in the screen and strike directly on the back of the throat. The enlarged cervical glands were next removed, and the x-ray treatment then continued until at the end of July the local conditions had entirely disappeared. Four months later it was found the disease was again showing itself by a small ulcer situated in the left nostril. The pharyngeal surface of the uvula was also infiltrated by three small tubercles, the naso-pharynx and oro-pharynx being in a healthy condition. The x-ray treatment was again used with satisfactory results. *Richards.*

IV.—LARYNX.

The Surgical Treatment of Laryngeal Tuberculosis, Especially by Means of Galvano-Cauterization.

MERMOD, (*Archives Internationales de Laryngologie,* September, 1904.) A strong plea in favor of the surgical treatment of tuberculosis of the larynx as the only scientific and effectual means for a cure. The writer considers in detail the various objections against such form of treatment. That occasionally tubercular ulcers in the larynx heal of themselves under general treatment is true. It occurs only after a long time and the poor who represent a large proportion of those so affected cannot afford such treatment. Others claim surgical interference tends to spread the disease besides being useless. Such has not been the writer's experience. He is a firm believer in the existence, not so uncommonly, of primary tuberculosis of the larynx. In such cases he believes surgical procedures are above all called for. In selected cases with

secondary lesions he claims to succeed even as well. The generalization of the disease by such a course of treatment is only coincidental. A cure is to be claimed, regardless of the eventual termination of the disease when the function of the organ has been restored and the tissues resume their normal character.

Surgical treatment is demanded as soon as infiltration exists. Lactic acid has a certain value not superior to other chemical substances. The submucous injection is more effective than in any other way, but is very painful, and besides causing reaction may aggravate the local process.

Laryngeal electrolysis has been successful in a number of cases. Removal of the diseased tissue by means of the Heryng-Krause forceps is theoretically the ideal method. It has, however, the grave objection that serious bleeding may follow, which it is hard or impossible to control. Edema may also follow. For this he employs the following formula by inhalation.

R

Acid carbolic	15
Potass. chlorat	15
Glycerin	100
Water	900

Galvano-cauterization avoids both hemorrhage and edema. The instrument should be delicately constructed, so as to give a good view of the field of operation. Thorough and complete cocainization is absolutely essential to success in application. This is secured by preliminary injection of morphin twenty minutes before beginning use of cocain. This lessens greatly the quantity of cocain necessary and serves to overcome the usual tendency to swallow on the introduction of the instrument. The cautery needle is to be used not superficially but is to be plunged thoroughly into the diseased tissue and allowed to burn continually or intermittently till a cavity is created.

No edema follows, but there is an active and more lengthy reaction than with the cutting forceps which may require the use of orthoform locally. At least two weeks should elapse before a second sitting, the patient meanwhile to use the phenochlorate inhalation.

Extended histories of patients treated by the different methods of treatment separately or together are given. At a recent congress in Lausanne, the writer presented 18 cured patients.

Out of 280 treated, many of whom did not continue treatment, he reports 60 healed for one year or less, 40 healed for two years, 17 healed for three years. Such an optimistic showing deserves to be read in full.

Some Phases of Chronic Laryngitis.

Z. L. LEONARD, New York. (*Medical Record*, July 30, 1904.) Several cases are reported, all of which show the necessity of careful examination of the larynx in all cases of cough not yielding readily to treatment, and the value of the institution of proper local treatment to any lesion which may be present. Many cases of chronic catarrhal inflammation will respond to treatment, and even if not cured, are very much improved. *Richards.*

Laryngitis Hypoglottica Acuta.

CHARLES W. RICHARDSON, Washington, D. C. (*Washington Medical Annals*, March, 1904.) The area most frequently affected is the immediate subcordal portion of the larynx, the infiltration of which becomes so great as to be fraught with danger to the life of the affected one. The acute exanthemata and the causes which predispose to acute laryngitis are the principal etiologic factors. The whole larynx is rarely affected. Pathologic changes are characterized by intense inflammatory redness of the affected portion of the larynx, and partial or diffuse, either unilateral or bilateral swelling of the affected portion of the mucous membrane.

The voice may or may not be very much disturbed; there is a croupy cough, slight stridulous breathing, acceleration of the pulse, moderate rise in temperature. The breathing becomes embarrassed and the stridor more pronounced as the case progresses. The extraordinary muscles of respiration are called into play; there is sinking in of the epigastrium and at the suprasternal notch during inspiration. The child's anxiety and distress become very apparent, cyanosis supervenes, and the pulse becomes small, rapid and thready. Unless relief is afforded through subsidence of the swelling by natural resolution or through mechanical means, the progress is to a fatal termination.

In the supracordal type the laryngeal picture is that of an intense deep redness of the mucosa, and when the false cords are the seat of infiltration, they bulge out so as to

nearly or quite overlap the true cords. In the subcordal type the picture is even more strikingly characteristic. On deep inspiration during inspection there will be seen two intensely red folds of mucosa, apparently immediately beneath the vocal bands, which are immobile during inspiration and expiration.

The differential diagnosis between this condition and laryngeal diphtheria cannot always be immediately made. In diphtheria the voice is more apt to be very hoarse or aphonic than in hypoglottic laryngitis, where the voice may be almost normal. In diphtheria there is more apt to be paroxysms of intense dyspnea, followed by periods of easier respiration, while in hypoglottic laryngitis the breathing is not paroxysmally worse but gradually and progressively worse. The presence of pharyngeal deposits, when a view cannot be obtained by the laryngeal examination, simplifies the differentiation. The result of a culture will demonstrate the absence or presence of the Klebs-Lœffler baccillus.

Treatment of this condition consists in the use of expectorants, free purgation, ice externally, the generation of steam in the room, and the local application or spraying into the larynx of a mild solution of silver one per cent. and suprarenal extract. If the respiration becomes very embarrassed or the child shows exhaustion, intubation or tracheotomy becomes necessary.

The author reports six cases, five of whom recovered. The sixth one died on the second day after intubation, from pneumonia. Two of the other cases required intubation for periods of from four to twelve days. *Richards.*

A Lecture on Acute Septic Inflammations of the Throat and Neck.

Sir Felix Semon, London, (*Brooklyn Medical Journal*, January, 1905), regards all septic inflammation of the neck as of common origin, and thinks that the classification which separates them in accordance with the particular part affected is an incorrect one; that the symptomatology of acute glossitis, of edematous pharyngitis and laryngitis, of acute edema of the larynx, of abscess of the larynx, of phlegmonous pharyngitis and laryngitis, of erysipelas of the larynx and of angina Ludovici are, with the exception that the commencement of the affection in one case is located a little higher up or in the other little lower down and in one case the exudate is serous and in another purulent, very much like one another.

There are two classes of pathogenic organisms; those which have a specific action and those which have merely an inflammatory effect. Of the specific bacteria there are great numbers, but the bacilli of tuberculosis, of pest, of relapsing fever, and diphtheria are the most important, and whenever these organisms produce any effect, it is always one and the same.

The specific organisms are large in number, the most prominent and representative of which is the streptococcus pyogenes, but all of these forms of organisms are more or less interchangeable with one another and all produce one and the same effect, namely inflammation. The blood vessels are attacked, become dilated, there is an alteration of wall and augmented transudation and increased permeability of the walls with emigration of leucocytes, and this emigration is the main symptom. Besides the sterptococcus pyogenes there are many other pathogenic bacteria; the various forms of the staphylococcus, the albus, aureus, flavus and citreus, the bacterium coli, the pneumococcus, the bacilli pyogenes fetidus, the tetragenus and the pyocyaneus.

Sir Felix regards these micro-organisms as interchangeable in the sense that they all may produce different forms of inflammation according to their quantity, virulence and to the nature and condition of the tissues of the body they invade. There is no pathogenic organism which always produces a serous exudate and none that always causes a purulent one. The characteristic of the inflammation depends upon the quantity and virulence of the invading organism and the resistance of the tissues where it makes its habitat. In the throat the tonsil is usually the part where localization takes place. This is easily explained by the anatomic structure of the parts, since the epithelial covering of these glands shows gaps large enough to allow of a transit of leucocytes, so that their crypts invite pathogenic micro-organism to make the tonsils their first habitat. But the organism may enter through any abrasion; may be on the tongue, the affection then being called a glossitis, or in the larynx, starting as an edema of the larynx, etc., the question where the disease is first located being purely accidental.

He reports three cases of severe septic infection.

Case one was a well known London surgeon, who, the day previous to the seizure, was perfectly well. Was taken ill with an acute septic inflammation of the throat; on the follow-

ing evening tracheotomy had to be performed, followed in three days by death.

Case two was perfectly well the day before the attack. Tracheotomy was done that very night but he died in three days.

Case three. Patient was in perfect health the evening before, but awoke the next morning with a violent chill, quickly followed by great difficulty in swallowing, with profuse perspiration. Sent for physician. Aphagia followed. Diagnosis made of tonsillitis and edema of the larynx with commencing pneumonia. Temperature, 104; hoarsenes rapidly increased; general dyspnea became threatening; whole pharynx bluishly discolored; epiglottis and arytenoid cartilages the same color; enormously edematous, covered by frothy secretions; patient was sitting upright in bed, covered with perspiration, in great distress. Sir Felix was about to leave the house, but before doing so went to the wife of the patient and discussed the matter of the possible necessity of a tracheotomy. He had hardly begun to speak when the door was opened and the family doctor called: "Come, he is choking." He followed, found the patient moribund, did an instant tracheotomy with a penknife and succeeded in opening the trachea, while calling to the daughters of the patient to bend some hairpins, by means of which he held the sides of the trachea asunder. Artificial respiration was carried out for fully 15 minutes, but the patient was dead. In this case the whole disease did not last eleven hours.

In spite of the fact that the three cases he reports all died, he thinks that the treatment of these cases may not be absoluely hopeless; that even though apparently most threatening, retrogressive changes may occur and recovery be brought about.

The onset of the disease is usually manifested by rigor, followed by quick rise of temperature, the symptoms of an ordinary sore throat or tonsillitis. The patient complains of violent sore throat, and in the course of a few hours grave dysphagia supervenes. On examination of the larynx there may be simply congestion, or, in the more severe cases, infiltration, or even considerable edema of the parts. In the more severe cases in a few hours after the initial pharyngeal symptoms, the dysphagia passes over into complete inability to swallow, the patient becomes hoarse, and this hoarseness in turn quickly passes into complete aphonia. The epiglottis is red, enor-

mously tumefied, dyspnea quickly increases, and tracheotomy is usually necessitated within twenty-four hours after the onset of the first symptoms.

For treatment there seems comparatively little to do unless there is fluctuation, when incision is to be done, and tracheotomy is to be performed as soon as threatening dyspnea makes its appearance. Intubation can be tried, but on account of the enormously distended structures of the larynx, would seem to be rather contra-indicated. If one could know the invading bacterium, an anti-toxic serum, formed by culture from that bacterium, would seem to be the indicated remedy. Sir Felix states that a few patients have been saved by using an anti-streptococcus serum prepared, not from one definite bacterium only, but by uniting the cultures of the various streptococci into one serum, in the hope that if not one, yet another may represent the proper antidote in the given case. In serious cases in which one is unable to ascertain immediately the nature of the pathogenic organism, he advises 20 c. c. to begin with and the repeating of this two or three times a day. It can do no serious damage, and may possibly save the patient. He thinks that in all cases the bacteriologic diagnosis should be secured if possible, but if it is not possible, inject the anti-streptococcus serum on chance.

Ludwig's angina, first described by an old Würtemberg practitioner who flourished about 1830, he regards as nothing but an infiltration of the neck, sometimes serous, sometimes purulent, sometimes gangrenous, of exactly the same nature as one sees in a septic pharyngitis or laryngitis. It will simply depend upon what stage of the disease the patient is seen whether, according to present terminology, a case is spoken of as Ludwig's angina, edema, erysipelas of the larynx, or as phlegmonous laryngitis or pharyngitis. Sir Felix thinks all these designations should be discarded and these affections be known simply as acute septic inflammation of the throat and neck. *Richards.*

V.—MISCELLANEOUS.

The Relation of Diseases of the Stomach to Affections of the Mouth, Nose and Throat.

ROBERT LEVY, (*N. Y. Med. Jour. and Philadelphia Med.*

Journal, Dec. 17, 1904.) After reviewing the various contributions in recent years to this question, concludes as follows:

"It appears from the foregoing that although diseases of the stomach cannot be said to be indisputably caused by affections of the mouth, nose and throat or indisputably the result of diseases of these organs, the correlation is so close that our successful management of both depends largely upon our recognition of this interdependence." *Harris.*

The Extraction of Foreign Bodies From the Bronchi.

A. COOLIDGE, JR., Boston. (*Boston Medical and Surgical Journal,* October 13, 1904.) Coolidge reports four cases of extraction of foreign bodies from the bronchi with the aid of the Killian straight tube. The article is accompanied by X-ray pictures showing the location of the foreign bodies.

In case one, a silver dime was the foreign body in the trachea in a man of 35. Low tracheotomy had been done with unsuccessful attempts at seizing the coin. The X-ray showed a foreign body to the right of the median line at the fifth costo-vertebral articulation. With the patient on his back, without a general anesthetic, a straight urethral speculum, 3½ inches long, 7-16 inch in diameter was introduced through the tracheal wound and pushed down nearly to the bifurcation. The coin was seen in the upper part of the right bronchus and removed with alligator forceps.

Case two was a child of twenty-two months in which a shawl pin was found, head down, in the right bronchus. The trachea was opened below the isthmus of the thyroid, the tracheal speculum introduced and pushed into the right bronchus until the point of the pin entered the tube. The pin was then seized with alligator forceps and removed. The pin was 1⅞ inches long, with a head ⅛ inch in diameter.

Case three, a woman of 24, inhaled a scarf pin 1½ inches long, with a head 3-16 inch in diameter. The X-ray showed the pin with the point at the fourth interspace on the left side, and the head directly below it and about one inch from the vertebral column. The trachea was opened, Killian's bronchoscope introduced and pushed to the left bronchus. Foreign body could not be seen. The bronchoscope had to be removed. Artificial respiration was required for a few moments, as the patient stopped breathing. The next day the X-ray showed the pin in the same place, and on the third day, without a general anesthetic, the trachea having been sprayed with co-

cain, the tube was introduced. The pin had in the meantime become dislodged, and was seen high up in the left branchus, and was easily removed.

The fourth case, a child of eight, reported in June, 1903, that he had swallowed a nail, but was not believed. He developed a right-sided bronchitis, which, although better, had persisted ever since, with occasional, periodic, asthmatic attacks. Recently the nail was remembered, an X-ray picture taken, which showed a foreign body in the right bronchus. The interior of the larynx was sprayed with 1% cocain and the patient etherized. With the head hanging over the end of the table, Killian's bronchoscope, (20 cm. long, 8 mm. in diameter) was introduced without difficulty, and pushed down into the trachea. The nail was seen point down in the trachea, with the point embedded in the tracheal wall. After two or three attempts the nail was freed from its impacted position, and although it slipped from the forceps, it followed the tube as it was withdrawn through the glottis, and was seized in the pharynx.

For the removal of foreign bodies in this way, the author says not only is a proper bronchoscope needed, but proper instruments for working through the tubes after it is in place. The introduction of the bronchoscope after previous tracheotomy presents no difficulties. The author is inclined to attempt the removal of inspired foreign bodies through the natural passages in most cases. *Richards.*

Ueber Fremkoerper. in den Oberen Luftwegen: für den practischen Arzt, Zusammengestellt von Dr. Friederich Hanszel, Wien, 1903, verlag von Joseph Safar.

This little monograph of 50 pages contains an account of the cases in Chiari's Clinic in which there was a foreign body in the upper portion of the respiratory tract. Altogether there were 114 cases during the eleven years of the period of observation and report. Foreign bodies in the nose numbered 51, 35 on the right side and 14 on the left and in two cases there were foreign bodies on both sides. Of the 63 cases of foreign bodies in the pharynx and larynx, the seat of trouble was the base of the tongue 10 times, the tonsils 19 and the recessus pyriformis 14. A very explicit and well arranged table of the 114 cases is appended.

Diseases of the Nose and Throat.

By D. Braden Kyle, M. D., Professor of Laryngology and Rhinology, Jefferson Medical College, Philadelphia; Consulting Laryngologist, Rhinologist and Otologist, St. Agnes' Hospital. Third Edition, Revised and Enlarged. Octavo volume of 669 pages, with 175 illustrations, and 6 chromolithographic plates. Philadelphia, New York, London: W. B. Saunders & Company, 1904. Cloth $4.00 net; Sheep or Half Morocco, $5.00 net.

The value of this work is evidenced by the fact that in a short space of time three editions have been demanded The general plan of the book is the same as that of the previous editions, such additions having been made as were rendered necessary by reason of medical progress. The most important alterations and additions have been made in the chapters on Keratosis, Epidemic Influenza, Gersuny's Paraffin Method for the correction of Nasal Deformities, and in the one on the X-Rays in the treatment of Carcinoma. The etiology and treatment of Hay Fever have been partially rewritten and much enlarged, as has also the operative treatment of Deformities of the Nasal Septum. The book is especially strong in its pathological and medical aspects; the etiology, pathology and medi-

cal treatment of most of the affections being considered at considerable length and with great clearness.

The classification of diseases is very complete and the description is clear, no less than seventeen varieties of laryngitis being described.

The chapter on general considerations of the mucous membrane is especially to be commended. The author thinks that in many cases of lesions of the mucous membrane of the upper respiratory tract, the part played by bacteria is purely secondary.

The chemistry of the saliva is considered as giving important information in regard to conditions of the blood and the general body. The author thinks the examination of the saliva will often give more real information than the examination of the urine, since the salivary secretion is a physiologic process in which physiologic material is secreted, which material when taken back into the system, serves both a physiologic and a chemical purpose.

In hay fever the chemistry of the secretion plays an important part in the individual susceptibility to the attacks, and the author has relieved a larger number of patients by altering the reaction of the secretion at the first sign of a repetition of an attack than by any other method. He finds local applications to give but slight temporary relief.

The distinctly surgical side of the treatment is not as well discussed as the medical. Too much is taken for granted. There is an insufficiency of detail as regards operative technique, and many of the well-recognized surgical procedures are either omitted or too meagrely discussed. The section on operative procedures of the faucial tonsil has less space given to it than this subject demands, and no mention whatever is made of the cold wire snare. Less than a page is devoted to the treatment of chronic suppuration of the frontal sinus, nor is the treatment as given that which has at the present time most general acceptance.

The book is illustrated with many colored plates; the drawings are exceptionally good, and as a whole it is very creditable to its author and to American laryngology.

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